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REPORT No. 9

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*Annotated Bibliography*  
of  
**SASKATCHEWAN  
GEOLOGY**

(1823 - 1951 incl.)

By

**W. O. Kupsch**

1952



**DEPARTMENT OF NATURAL RESOURCES**

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SASKATCHEWAN  
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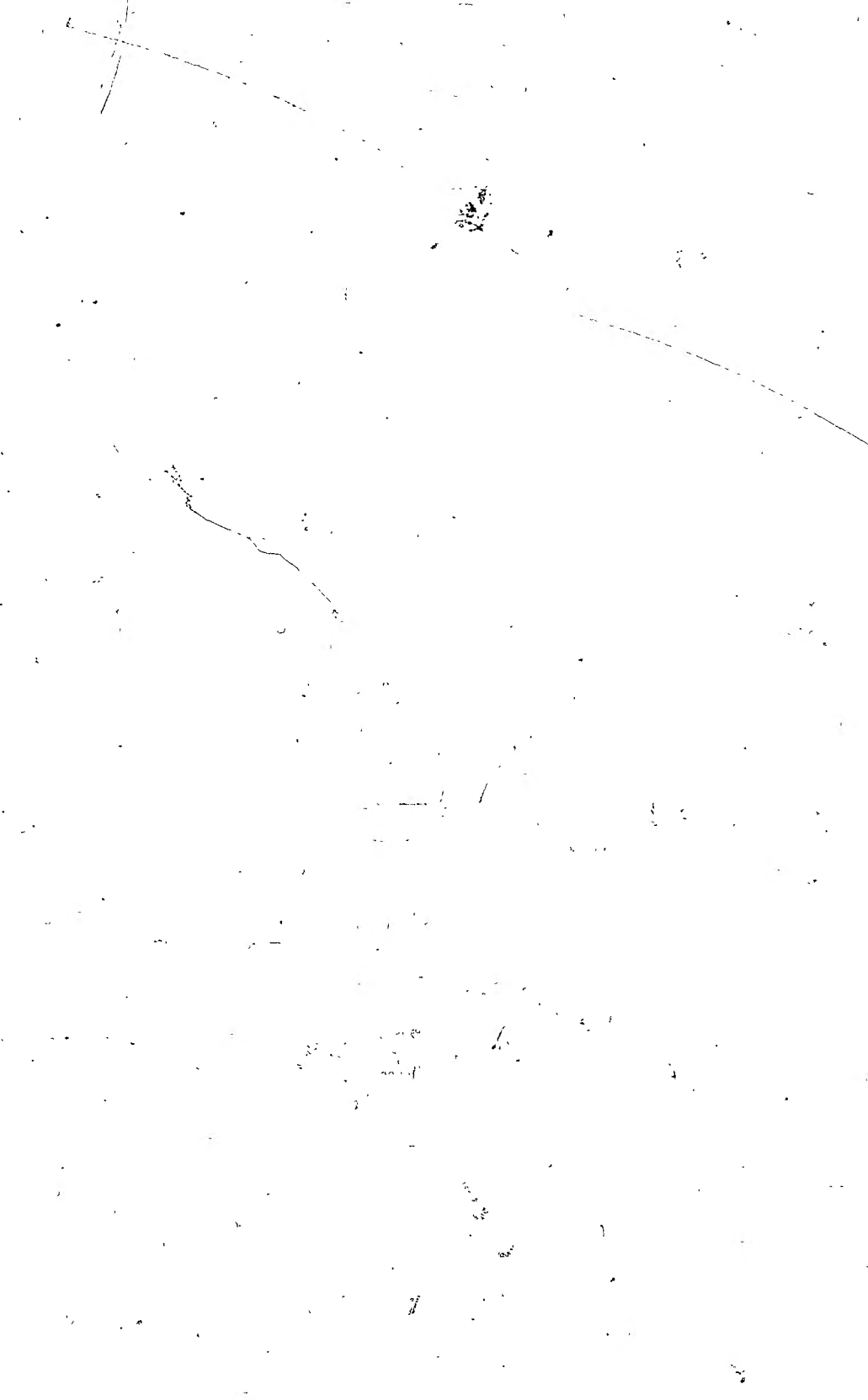
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REGINA

1952







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## Introduction

This annotated bibliography includes published papers relating to the general geology, paleontology and mineralogy of Saskatchewan. It does not list geographic works and travelogues in which geological facts are mentioned only incidentally.

No papers published after December 31, 1951 are mentioned. The oldest publication included is that of RICHARDSON (1823). Earlier works are not referred to as these deal almost exclusively with the topography of the region and describe only a few disconnected geological aspects. A fairly complete bibliography to these reports is to be found in CHAMBERS (1914) and a selected bibliography in McINNES (1913).

The publications are listed alphabetically according to authors, giving the full title, the source and a short annotation. This annotation is meant to be an expansion of the title providing additional information about the contents of the article and not an abstract giving a synopsis of scientific data, results and hypotheses presented. At the end of the annotation the area covered by the entry is indicated by numbers according to the National Topographic System. The papers of each author are arranged in chronological order with no definite order of arrangement in a year.

Papers written by two or more authors are entered only under the name of the senior author, following all other papers by that author. For example: WICKENDEN and GRAHAM (1937) follows WICKENDEN (1951). These joint publications are not cross indexed under the names of the co-authors. Therefore the above mentioned paper by WICKENDEN and GRAHAM has not been entered under GRAHAM.

Abstracts of papers are mentioned only in case a full length article by the author on the particular subject is not yet published. Preliminary reports which were later followed by final accounts are also omitted (e.g. pre-publication issues in mimeographed form of the Memoir Series of the Mines Branch). Articles which appeared in the Bulletin of the Canad. Inst. Mining Metal. and were later reprinted in the Transactions of this institute are entered only under the Transactions. In general, reprints of an article are not given but only the original source is indicated.

Geological maps covering areas within the province are listed as an individual entry under the author's name only in case they were published separately and do not form part of a report. The other geological

maps are to be found under the entry of the publication that they accompany. A complete summary of all geologic maps of Saskatchewan is given in the index. Topographic maps are listed collectively under the heading Dept. of Mines (Top). All air photographs are entered under Dept. of Mines (Air).

In the index the subject indexed is followed by a designation of the area covered by the report. Reference to the report is made by name of author and year of publication. The area covered is indicated according to the National Topographical System, a grid system applicable to all of Canada and in general use for all newer topographic maps. The index map accompanying this publication shows the part of this grid system covering Saskatchewan.

As this is the first time a compilation of the geological literature on Saskatchewan has been attempted, it is very well possible that some papers have been omitted. The writer therefore welcomes any suggestions for additions or revisions.



## Acknowledgments

The writer is thankful for the efficient way in which the extensive secretarial work connected with the compilation of this bibliography was performed by Miss E. Scull. Mr. D. R. Francis assisted in listing the geographic names of Saskatchewan. Kind cooperation was given by Miss M. R. Murray and Miss B. Hobbs, both of the Main Library of the University of Saskatchewan, in locating many obscure publications. As all entries were personally checked by the author in order to write the annotations the strain on the librarian of the Geology Library of the University of Saskatchewan was considerable and the writer gratefully acknowledges the help received from Mrs. L. Sins.

This work would not have been possible without the detailed knowledge of the geological literature of this province possessed by the colleagues of the writer on the staff of the Geology Department of the University of Saskatchewan. Therefore many thanks are due Professors J. B. Mawdsley, F. H. Edmunds and A. R. Byers.

## Guide to G.S.C. Publications

As most references to the geology of Saskatchewan are to be found in publications by the Geological Survey of Canada it seems advisable to include here a list of all the different categories of publications issued by the G. S. C. during the years of its existence.

1. **REPORTS OF PROGRESS.** The Geological Survey was established in 1842. Reports of Progress were issued from that date to 1885. The parts are, or are not, lettered.

2. **ANNUAL REPORTS (NEW SERIES).** For the years from 1885-1904, comprising volumes I-XVI. The publication of the volumes of "Annual Reports" was discontinued with vol. XVI for 1904 (published 1907). The parts are lettered. Most of the individual reports contained in these volumes were also published separately and from 1910 on these reports form the *Mémoire* series.

3. **SUMMARY REPORTS.** From 1905-1933, published annually. Before 1885 Summary Reports were not published separately but form an integral part of the Report of Progress. Later they formed part "A" of the Annual Reports (from 1885-1904), but were also published separately in "Blue-book" form. From 1905-1916 the Summary Reports were published completely independently in "Blue-book" form only. This "Blue-book" series was discontinued in 1916, the last one being issued in that year. It was superseded by the series of Divisional Summary Reports, in lettered parts and gray-brown cover. This series has also been discontinued, that for 1933 being the last.

4. **MEMOIRS.** Published since 1910 and continued to date.

5. **GUIDE BOOKS.** Prepared for the XII International Geological Congress held in Canada, 1913.

6. **ECONOMIC GEOLOGY SERIES.** Published since 1933 and continued to date.

7. **PAPERS.** Published in mimeographed form since 1935 and continued to date. Most of these papers are marked Preliminary Reports, and some are now superseded by final publications in printed form (maps, etc.).

8. **GEOLOGICAL SURVEY BULLETINS.** This is a new series started in 1945. Not to be confused with Museum Bulletins.

9. **MUSEUM BULLETINS.** Published since 1913. In yellow cover. Grouped in three series: Biological series, Anthropological series and Geological series. Also many non-serial Bulletins, including Annual Reports for the Museum. The National Museum now forms a separate part of the Mines and Geology Branch, independent of the Geological Survey but as the numbering of the Bulletins was continued these publications are here considered as if they were still G.S.C. publications.

10. **MISCELLANEOUS.** Besides the above-listed large groups of publications many reports etc. were also issued, not falling in any one of the categories mentioned. These include among others: Indian Leaflets,

Special Contributions, Reports of Canadian Arctic Expedition- 1913-1918, Geology of Canada with atlas, Reports sent to press between discontinuance of Annual Reports and commencement of Memoirs, Catalogues and Indexes, Special Reports, Reports to other agencies, Reprints, Mining Textbooks, etc.

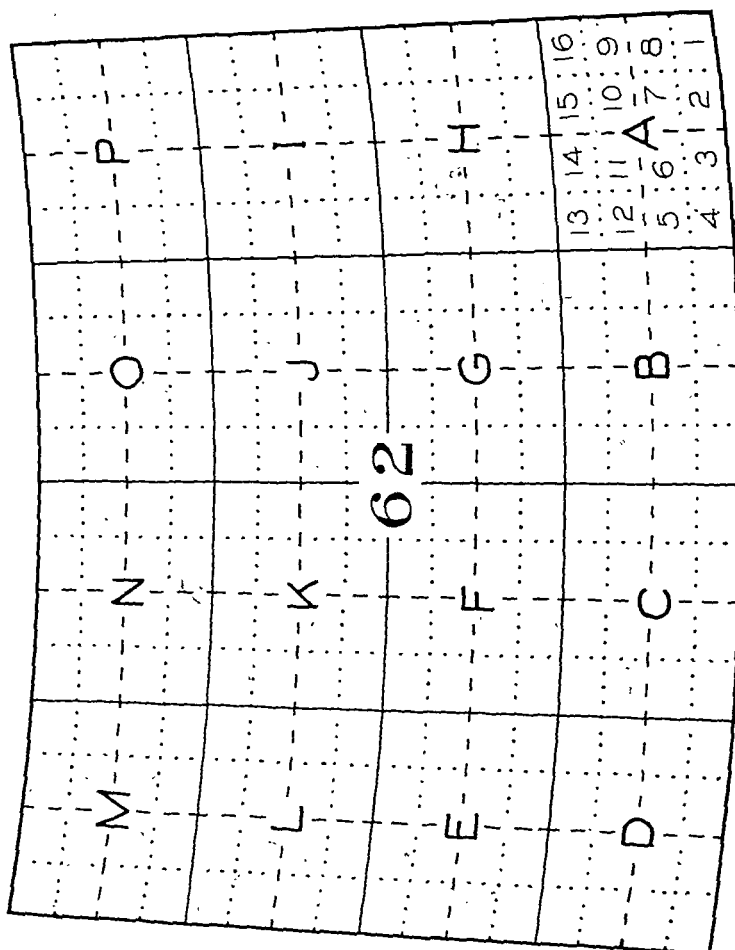
11. MAPS. At first G.S.C. geological maps were not numbered at all. Around 1890 maps as well as reports received publication numbers. The unnumbered maps with the maps bearing only a publication number are together called "Non-serial" maps. Around 1910 the A-series was initiated, but at the same time the publication of "Non-serial" maps was continued. The first 328 maps of the A-series received a publication number in addition to the A-number. Later maps show only the A-number. In the present bibliography only the A-numbers are given for all maps of this series.

A guide to the topographical maps covering Saskatchewan, issued by the G.S.C. is to be found in this bibliography under the entry Dept. of Mines (Top.).

## The National Topographical System

The grid system used on the index map of Saskatchewan accompanying this bibliography has a basic unit of 4 degrees in latitude by 8 degrees in longitude. This unit is subdivided as shown in the diagram below.

Diagram showing system of numbering



Every numbered unit is subdivided the same as 62

Map sheets of the National Topographical Series covering the area of this basic unit are on the scale of 1 inch to 16 miles (approximately 1:1,000,000) and designated by one number, e.g. 62. This is the so-called sixteen-mile sheet.

Each sixteen-mile sheet is quartered into sheets, scale 1 inch to 8 miles, named respectively N.W., N.E., S.W., S.E., the number on the map taking the form: 62 N.W. The same area can also be designated by the notation 62-K,L,M,N; which is preferred by the writer because of technical reasons.

Each sixteen-mile sheet is divided into sixteen sheets, scale 1 inch to 4 miles, (called four-mile sheets), lettered regularly from A to P as shown on the diagram, the number on the map taking the form: 62A. In this bibliography a hyphen is used between the number and letter: 62-A. If more letters follow the same number, then these are separated by commas: 62-A,B,C.

Each four-mile sheet is quartered into sheets, scale 1 inch to 2 miles, named respectively N.W., N.E., S.W., S.E., the number taking the

form: 62  $\frac{A}{NW}$  on the map sheet. For typographical reasons the writer

designates the same area by the notation: 62-A-11,12,13,14, which although longer can be readily understood by reference to the index map.

Each four-mile sheet is divided into sixteen sheets, scale 1 inch to 1 mile, numbered from 1 to 16 as shown on the diagram, the number

taking the form: 62  $\frac{A}{7}$  on the maps and 62-A-7 in this bibliography.

Other areal symbols used, such as 62-A (West half) or 62-A-7 (East half) are self-explanatory.

## List of Abbreviations

Am.	America, American
Assoc.	Association
Bull.	Bulletin
Can.	Canadian
Cong.	Congress
Dept.	Department
E.	East
Econ.	Economic
Ed.	Edition
Eng.	Engineers
et al	et alii; and others
fig.	figure
figs.	figures
Geog.	Geographical
Geol.	Geology, Geological, Geologists
G.S.C.	Geological Survey Canada
ill.	illustrated
Inst.	Institute
Internat.	International
Jour.	Journal
Mag.	Magazine
Mem.	Memoir
Metal.	Metallurgical
Mon.	Monograph
N.	North
Nat.	Natural
No.	Number
p.	page, pages
Petrol.	Petroleum
Philos.	Philosophical
Prec. Sask.	Precambrian Saskatchewan, the northern part of the province belonging to the Precambrian Shield
Prelim.	Preliminary
Proc.	Proceedings
Prof.	Professional
Prov.	Province
pt.	part
Quart.	Quarterly
Rept.	Report
Res.	Resources
Rev.	Revised
R.M.	Rural Municipality
S.	South
Sask.	Saskatchewan
Sci.	Science

# List of Abbreviations—*Continued.*

sec. _____	section
Sed. Sask. _____	Sedimentary Saskatchewan, the southern part of the province underlain by Post-Precambrian rocks
ser. _____	series
Soc. _____	Society
Top. _____	Topographical
Trans. _____	Transactions
Univ. _____	University
U.S. _____	United States
vol. _____	volume
vols. _____	volumes
W. _____	West
W.S.P. _____	Water Supply Paper

## REFERENCES

### ALBERTA SOCIETY OF PETROLEUM GEOLOGISTS

- (1951): *Western Canada*, Am. Assoc. Petrol. Geol., Bull., vol. 35, p. 169-184, 5 figs.

Revision of similar paper in A.A.P.G. Bulletin presented by the society in 1941. General discussion of stratigraphical and structural relations of western Canada. Possible oil and gas reservoirs are considered. Sed. Sask.; 72-H-10.

### ALCOCK, F. J.

- (1915): *Geology of the north shore of Lake Athabaska, Alberta and Saskatchewan*, Geol. Survey Canada, Summary Rept. 1914, p. 60-61.

Brief preliminary account of fieldwork in 1914. Short description of the Athabaska sandstone and other rock types mapped. Mentions some economic minerals. 74-N.

- (1917): *Black Bay and Beaverlodge Lake areas, Saskatchewan*, Geol. Survey Canada, Summary Rept., 1916, p. 152-156.

Brief description of geology with emphasis on the rock types mapped. The presence of hematite-bearing deposits is mentioned. 74-N-7,8,9,10.

- (1920a): *The Athabaska series*, Am. Jour. Sci., 4th ser., vol. 50, p. 25-32.

Described are the lithological character and structural features of the rocks of this series. This is followed by a discussion of the age and origin. Main reference of this series. 74.

- (1920b): *The norite rocks of the Lake Athabaska region*, Royal Soc. Canada, Trans., 3d ser., vol. 14, sec. 4, p. 25-29, 1 fig.

The rocks described outcrop at the eastern end of Lake Athabaska. They are intrusive into Precambrian gneisses. A petrological description is given but the geological relationships are only briefly presented. 74-O.

- (1920c): *The origin of Lake Athabaska*, Geographical Review, vol. No. 6, p. 400-407, 9 figs.

The physiography of the Lake Athabaska region is discussed and a glacial origin of the lake is advocated. 74-N,O.

- (1923): *Flin Flon map area, Manitoba and Saskatchewan*, Geol. Survey Canada, Summary Rept. 1922, pt. C, p. 1-36, 6 figs., 3 plates, geol. map, claims map. (G.S.C. Map No. 1994 and No. 1978).

Major classical reference to Flin Flon area. Description of rock types. Structural features are treated only briefly. Geological history interpreted. Description of claims and mining operations. Geol. map on scale 1 inch to  $\frac{1}{2}$  mile. Claim map on scale 1 inch to 250 feet. 63-K12,13.

- (1924): *The Pas mineral belt*, Can. Mining Jour., vol. 45, p. 713-715, 3 figs.

General description of the region followed by a discussion of mineral properties, all of which are in Manitoba. 63-K,L.

- (1930): *Zinc and lead deposits of Canada*, Geol. Survey Canada, Econ. Geol. Ser. No. 8, 406 pages, 8 plates, 34 figs., map.

Briefly discusses the general geology of the region surrounding Flin Flon. More emphasis is placed on the mineralogy of this ore body and its origin. Also a zinc-lead-copper prospect on the east shore of Reindeer Lake is mentioned. 63-K-13; 64-E-1.

- (1935a): *Copper in Canada*, in: *Copper resources of the World*, vol. 1, XVI Int. Geol. Cong., Washington D.C., p. 65-136, 11 figs., 3 plates.

A rather brief but well written review of the Flin Flon region occupies seven pages in this paper on all copper resources of Canada. The geology of the Pas Mineral Belt is summarized and a table of formations of the region given. The Flin Flon mine is discussed as to history and geology. Some plans and sections are provided. 63-K-13.

- (1935b): *Mudjatik-Haultain area, Saskatchewan*, Geol. Survey Canada, Mem. 180, 16 pages, geol. map in 4 sheets, 2 plates, 2 figs. (G.S.C. Maps 317A, 318A, 319A, 320A).

Short report to accompany the Mudjatik-Haultain geologic map sheet. Three different rock groups in the Pre-cambrian are described but not named. Main reference to this particular area. Maps on scale 1 inch to 1 mile. 74-B.



- (1936a): *Geology of Lake Athabaska region, Saskatchewan*, Geol. Survey Canada, Mem. 196, 41 pages, 8 plates, 2 figs., 4 geol. maps (G.S.C. Maps No. 339A, 363A, 364A, 365A).

Report to accompany geologic maps of the northwest corner of Sask. Description of the Precambrian rocks mapped is given. Three groups of sedimentary rocks and three periods of intrusion are distinguished in the Precambrian. Main reference to this area. One map (339A) on scale 1 inch to 1 mile, the others 1 inch to 4 miles. 74-N,O,P.

- (1936b): *The gold deposits of Lake Athabaska*, Can. Inst. Mining and Metal., Trans., vol. 39, p. 531-546, 18 figs.

Main reference to the various gold properties on the north shore of Lake Athabaska. A description of all properties is divided and an outline of the development work is given. The general geology is briefly discussed. 74-N-8.

- (1938): *Reindeer Lake South map-area, Saskatchewan*, Geol. Survey Canada, Paper, 38-15, 17 pages, 2 geol. maps.

Report describes the Precambrian rocks mapped on two sheets covering 64-D. The rocks of the lower unnamed group resemble lithologically and structurally the Wekusko group. For final maps see ALCOCK (1939a) and ALCOCK (1939b). Maps on scale 1 inch to 4 miles. 64-D.

- (1939a): *Wapus Lake, Northern Saskatchewan*, Geol. Survey Canada, Map No. 527A, with descriptive notes.

Final map previously published in preliminary form (ALCOCK, 1938) under the title Reindeer Lake South map-area (East half). Scale 1 inch to 4 miles. 64-D (East half).

- (1939b): *Oliver Lake, Northern Saskatchewan*, Geol. Survey Canada, Map No. 528A, with descriptive notes.

Final map previously published in preliminary form (ALCOCK, 1938) under the title Reindeer Lake South map-area (West half). Scale 1 inch to 4 miles. 64-D (West half).

#### ALCOCK, F. J. and CAMSELL, C.

- (1916): *Lake Athabaska, Saskatchewan and Alberta*, Geol. Survey Canada, Map No. 1991.

No accompanying publication. Part of the area is covered in ALCOCK (1915). Map does not have descriptive notes. Scale 1 inch to 8 miles. 74-K,J,N,O.

#### ALCOCK, F. J. et al.

- (1941): *Haultain River, Northern Saskatchewan*, Geol. Survey Canada, Map No. 579A, with descriptive notes.

Final map previously published in preliminary form (SPOULE, 1938a) under the title Mudjatik, East half. Scale 1 inch to 4 miles. 74-B (East half).

#### ALDEN, W. C.

- (1924): *Physiographic development of the northern Great Plains*, Geol. Soc. Am., Bull., vol. 35, p. 385-424, 12 plates.

Important reference to the physiographic history of the Cypress Hills. Discussion of the Oligocene deposits of that region and the Cypress Plain (see also LAWSON, 1925). 72-F.

- (1932): *Physiography and glacial geology of eastern Montana and adjacent areas*, U.S. Geol. Survey Prof. Paper 174, 133 pages, 19 text-figs., 51 plates.

The Cypress Plain and underlying rocks are discussed. Outlines the Altamont moraine of the Later Wisconsin stage of the Keewatin ice sheet in southern Sask. 72-F,G,H.

#### ALLAN, J. A.

- (1918): *Sections along North Saskatchewan River and Red Deer and South Saskatchewan rivers, between the third and fifth meridians*, Geol. Survey Canada, Summary Rept. 1917, pt. C, p. 9-12.

Reconnaissance survey in which were mapped the natural exposures of Cretaceous strata along the rivers only, mainly to determine the structure. The stratigraphy is briefly summarized. Mainly dealing with outcrops in Alberta. 72; 73.

ALLAN, J. A. and CAMERON, A. E.

- (1923): *An occurrence of iron on Lake Athabaska*, Fourth Annual Rept. on the Mineral Resources of Alberta, 1922, part II, 33 pages, 11 plates, 1 fig., 2 geol. maps.

Main reference to the iron ore claims in the Fishhook Bay area. Discussed are the physiography, general geology, structure and economic geology as well as the commercial possibilities of iron ore from Lake Athabaska. 74-N-8.

ALLEN, C. C.

- (1941): *Mari Lake, Saskatchewan*, Geol. Survey Canada, Map No. 639A.

No accompanying publication. Map provided with marginal descriptive notes. Scale 1 inch to 1 mile. 63-M-1.

ALLEN, R. B.

- (1950): *Fracture systems in the pitchblende deposits of the Beaverlodge Lake area, Saskatchewan*, Can. Inst. Mining and Metal., Trans., vol. 53, p. 299-300.

Paper is based on close study of radioactive fractures and veins at Martin Lake and Black Lake. The relationships between the Tazin series and Athabaska series are mentioned. 74-N-9(10); 74-P-3,6.

AMBROSE, J. W.

- (1936a): *Progressive kinetic metamorphism in the Missi series, near Flin Flon, Manitoba*, Am. Jour. Sci., 5th ser., vol. 32, p. 257-286, 6 figs.

Main reference to the metamorphosed Precambrian sedimentary Missi series. Petrographic descriptions of the rocks typical for the three metamorphic zones recognized. Includes sketch map of geology in the vicinity of Flin Flon. 63-K-13.

- (1936b): *Structures in the Missi Series near Flin Flon, Manitoba*, Royal Soc. Canada, Trans., 3d ser., vol. 30, sec. 4, p. 81-98, 4 figs.

The general geology of the Flin Flon area is briefly discussed. The regional structures in the Precambrian sedimentary rocks of the Missi series are discussed and cross sections presented. The origin of the structures and their relation to the Flin Flon shear zone is considered. 63-K-12,13, 63-L-9,16.

AMI, H. M.

- (1891): *On some extinct vertebrata from the Miocene rocks of the Northwest Territories of Canada recently described by Professor Cope*, Science, vol. 18, p. 53.

Brief description of specimens collected from Swift Current Creek area, Cypress Hills. The rocks are now considered Oligocene in age. For more extensive descriptions and figures see COPE (1891). 72-F-10.

ANDRICHUK, J. M.

- (1951): *Regional stratigraphic analysis of Devonian system in Wyoming, Montana Southern Saskatchewan, and Alberta*, Am. Assoc. Petrol. Geol., Bull., vol. 35, p. 2368-2408, 13 figs.

Of three southwestern Sask. wells a subsurface sample study was made and of several other wells the electrologs were studied. The evaporite cycle is discussed. Petroleum possibilities are mentioned. 72.

ANONYMOUS

- (1938): *The mineral resources of Saskatchewan*, Prov. of Sask., Dept. of Nat. Res., 21 pages, 5 plates, 7 figs.

The information given in this publication is also to be found in a newer and more comprehensive booklet (ANONYMOUS, 1947).

- (1944): *The search for oil in Saskatchewan*, Precambrian, vol. 17, No. 12, p. 4-7, 9 figs.

This article is a reprint from the Imperial Oil Review and gives a popular account of the exploration work performed by Imperial Oil Ltd. Index maps show the extent of geological surveys, core tests drilled, gravimetric surveys and seismograph surveys. 62, 72.

- (1947a): *Annual report of the mines branch*, Prov. of Sask., Dept. of Nat. Res., Annual Rept. 1947, p. 34-47, 9 figs.

Statistics of mineral production including the coal output. Progress in the mining industry discussed. Summary on salt development including stratigraphic column of salt discovery well Verbata No. 2. Sed. Sask.; 73-C-11.

- (1947b): *The natural resources of Saskatchewan*, Prov. of Sask., Dept. of Nat. Res., 152 pages, 42 plates, 12 figs.

Best comprehensive account of Sask.'s mineral wealth available. Location of the various mineral deposits is given, in some cases illustrated by means of index maps. No geological details given but economic possibilities are stressed. Prec. Sask.; Sed. Sask.; 72-F-12; 73-G-8.

- (1947c): *Geology of the Athabaska Lake area, Saskatchewan*, Western Miner, vol. 20, p. 154-158, 2 figs.

Brief review of the geology and development of the area. Article is compiled from previous publications. 74-N-7,8,9,10.

- (1950): *Report of mineral resources branch*, Prov. of Sask., Dept. of Nat. Res., Annual, Rept. 1950, p. 13-38, 4 figs.

Production and progress in the mineral industry. Contains account of two finds of asbestos. 63-K-12; 64-D-10.

- (1951): *Schedule of wells*, Prov. of Sask., Dept. of Nat. Res., 129 pages.

The latest issue of a yearly publication. Part I lists all wells, drilled for oil and gas in Sask. giving name, location, elevation, technical information, depth of geological formations. Part II lists exploration, drilling and production data to 1951. Sed. Sask.

## BAKER, F. C.

- (1934): *Description of a new species of Gyraulus*, Can. Field-Naturalist, vol. 48, p. 37, 3 figs.

Described and figured is *G. cyclostomus* n. sp. collected from interglacial strata near Rosetown. 72-O-12.

## BELL, ROBERT

- (1874): *Report on the country between Red River and the South Saskatchewan, with notes on the geology of the region between Lake Superior and Red River*, Geol. Survey Canada, Rept. of Progress 1873-1874, p. 66-93.

Early reconnaissance survey of southern Sask., especially the vicinity of Last Mountain Lake, Wood Mountain and Dirt Hills. The coals of southern Sask. were investigated and some analyses are presented. 62, 72.

- (1876): *Report on the country west of Lakes Manitoba and Winnipegosis, with notes on the geology of Lake Winnipeg*, Geol. Survey Canada, Rept. of Progress 1874-1875, p. 24-56.

Mainly description of physiographic features observed during trip from Pelly down the Assiniboine valley. The Cretaceous strata of the Duck Mountain region were investigated. 62-N.

- (1881): *Report on Hudson's Bay and some of the lakes and rivers lying to the west of it*, Geol. Survey Canada, Rept. of Progress 1879-1880, p. C, 113 pages, 8 plates, forest map.

The part dealing with Sask. describes the geography of the country bordering the route from Cumberland House via Windy Lake, Deschambault Lake, Churchill River to Reindeer Lake. Only general remarks about the geology. 63-L,M; 64-D,E.

- (1885): *Report on part of the basin of the Athabaska river, North West Territory*, Geol. Survey Canada, Rept. of Progress 1882-1883-1884, pt. CC, 37 pages, 4 figs., geol. map.

Deals only briefly with Sask. near Ile-a-la-Crosse giving few geological observations. 73-N,O; 74-C; 74-O-5.

## BERRY, E. W.

- (1930): *Fossil plants from the Cypress Hills of Alberta and Saskatchewan*, National Museum Canada, Museum Bull. No. 63, Geol. Ser. 51 (Contributions to Canadian Paleontology), p. 15-28, 2 plates.

Major reference to the fossil plants of the Estevan sandstone and Ravenscrag beds. Full description of the better preserved specimens including some figures. 72-F.

- (1935): *A preliminary contribution to the floras of the Whitemud and Ravenscrag formations*, Geol. Survey Canada, Mem. 182, 107 pages, 20 plates.

Main reference to the paleobotany of the Whitemud and Ravenscrag formations of southern Sask. 72-F,G,H.

**BICHAN, W. J.**

- (1948): *Preliminary report on radio-active discovery at Lac La Ronge*, Can. Mining Jour., vol. 69, p. 97-99, 3 figs.

Brief description of the pegmatite and aplite dikes which were found to be radio-active. 73-P-7,8.

**BILLINGS, ELKANAH**

- (1859): *Geological formation of the country*, in: DAWSON (1859), 2 pages (not numbered).

Description of various plants and invertebrate fossils collected from the Tertiary and Cretaceous of Sask. The localities are not accurately given. Earliest account on the Cretaceous fossils from this province. See also MEEK (1859). Sed. Sask.

**BINGAY, T. W. and ALCOCK, F. J.**

- (1927): *Lead and zinc in Canada*, Can. Inst. Mining and Metal., Bull. vol. 20, p. 920-943, 13 figs.

A brief outline of the Flin Flon deposit is contained in one paragraph. 63-K-13.

**BLAKE, D. A. W.**

- (1951): *Forget Lake map-area Saskatchewan*, Geol. Survey Canada, Paper 51-7, 11 pages, geol. map.

Area mapped is adjacent to that of CHRISTIE and KESTEN (1949). Description of rock types is main part of paper. Few uranium discoveries in this area, but favorable structures continue from neighboring area. Map on scale 1 inch to  $\frac{1}{2}$  mile. 74-N-8,9.

**BOWIE, WILLIAM**

- (1928): *Gravity in western Canada*, Am. Jour. Sci., 5th ser., vol. 16, p. 263-266.

A discussion of MILLER (1927) presenting no additional information. Sask.

**BROOKER, E. J. and NUFFIELD, E. W.**

- (1951): *Studies of radioactive compounds: IV—Pitchblende from Lake Athabaska*, Abstract in: Geol. Soc. Am., Bull. vol. 62, p. 1425-1426.

The influence of the U6/U ratio on x-ray powder photographs is briefly discussed. 74-N.

**BROWN, R. W. and HOULDSWORTH, EDGAR**

- (1939): *The fruit of Trapa? microphylla Lesquereux*, Washington Academy of Science, Jour., vol. 29, p. 36-39, 9 figs.

Description of leaf material with fruit attached from the Big Muddy valley, which shows that the fossil was unquestionably a hydrophyte as previously assumed. 72-H-2.

**BROWNELL, G. M. and KINKEL, A. R.**

- (1935): *The Flin Flon Mine: Geology and paragenesis of the ore deposit*, Can. Inst. Mining and Metal., Trans., vol. 38, p. 261-286, 16 figs.

Main reference to the mineralogy of the Flin Flon ore. The geology and structure are also discussed. Several photomicrographs of polished specimens are presented. 63-K-13.

**BROWNING, C. P.**

- (1927): *Canadian copper and its production*, Can. Inst. Mining and Metal., Bull. vol. 20, p. 944-972, 12 figs.

A brief description of the Flin Flon deposit is included in a general review of the principal copper occurrences in Canada. 63-K-13.

**BRUCE, E. L.**

- (1914): *Beaver Lake mining district, Saskatchewan*, Can. Mining Jour., vol. 35, p. 504-505.

Brief summary account of the Amisk (or Beaver) Lake area. For more comprehensive account see BRUCE (1918). 63-K-5,12,13; 63-L-8,9,16.

- (1915a): *Amisk Lake district, Northern Saskatchewan and Manitoba*, Geol. Survey Canada, Summary Rept. 1914, p. 67-69.

Brief preliminary report about fieldwork done in 1914. The rock types are described, as are the gold-bearing veins previously discovered in this district. 63-L-9.

- (1915b): *A new gold area in northern Saskatchewan and Manitoba*, Can. Mining Inst., Trans. vol. 18, p. 174-181.

General description of the geology around Amisk Lake and vicinity. 63-L-9.

- (1916): *Amisk-Athapapuskow Lake area, Northern Saskatchewan and Northern Manitoba*, Geol. Survey Canada, Summary Rept., 1915, p. 126-130.

Brief preliminary account of fieldwork done in 1915. Description of rock types mapped, followed by discussion of various claims and the work performed on them. 63-K-13; 63-L-9.

- (1918): *Amisk-Athapapuskow Lake district (Saskatchewan-Manitoba)*, Geol. Survey Canada, Mem. 105, 91 pages, 7 plates, 4 figs., geol. map (G.S.C. Map No. 1692 and No. 1726).

Main reference to the Amisk Lake area, southwest of Flin Flon. Discusses comprehensively the Precambrian and Paleozoic rock types mapped. Description of individual claims in the area. Map on scale one inch to three miles. 63-K-5, 12, 13; 63-L-8, 9, 16.

- (1924): *Mineral possibilities of Northern Saskatchewan*, Can. Mining Jour., vol. 45, p. 618-621, 8 figs.

Review of mineral discoveries made in Sask. Mentions the Prince Albert gold claim at Amisk (Beaver) Lake, Flin Flon, nickel and iron from Lake Athabaska. Article compiled from previous more extensive reports. 63-K-13; 63-L-9; 73-P; 74-N.

#### BRUCE, E. L. and MATHESON, A. F.

- (1930): *The Kiseynew gneiss of Northern Manitoba and similar gneisses occurring in Northern Saskatchewan*, Royal Soc. Canada, Trans., 3d ser., vol. 24, sec. 4, p. 119-132, 3 plates.

Gneisses examined at several places in Sask. are described as to mineralogical content. All are re-crystallized sediments similar to the Kiseynew gneiss but no direct correlation of these gneisses in various areas is attempted on the basis of lithology only. 73-P-8, 15; 74-A-7; 74-O-8.

#### BRYCE, GEORGE

- (1907): *Everyman's geology of the three prairie provinces of the Canadian west*, Winnipeg, 68 pages, 2 geol. maps, 2 sections, 1 fig.

A popular summary account of the geology of the prairie provinces. Sed. Sask.

#### BUFFAM, B. S. W.

- (1951): *Uranium deposits, Beaverlodge area, Saskatchewan, Canada*, Abstract in: Geol. Soc. Am., Bull. vol. 62, p. 1427.

Brief outline of geological occurrence of the pitchblende deposits. 74-N-10.

#### BUKEAU OF STATISTICS

*Annual report on the mineral production of Canada*, Published yearly from 1921-1933.

For earlier years see McLEISH (1906-1920) For later years see MINES BRANCH which published production statistics in annual reports under the title *The Canadian mineral industry* from 1934-1949 (no publications during the war years 1939-1943). Statistics prior to 1906 were issued by the Geol. Survey Canada but in these publications Saskatchewan is not listed as such.

#### BYERS, A. R.

- (1949): *Geology of the Waddy Lake area, Rottenstone mining division, Saskatchewan Prov. of Sask.*, Dept. of Nat. Res., Precambrian Geology Series, Rept. 1, 36 pages, 10 figs., geol. map.

Main reference to this area which was mapped on scale 1 inch equals  $\frac{1}{2}$  mile. The different rock types are described; structures treated briefly. All economic mineral occurrences are dealt with in detail. 64-D-4, 5.

#### BYRNE, N. W.

- (1937): *Diamond drilling at Lake Athabaska*, Can. Inst. Mining and Metal., Trans., vol. 40, p. 165-184, 13 figs.

The paper deals mainly with sampling techniques but in the introduction the geology of the Athabasca Mines is discussed with the aid of a geologic map of that property and several cross sections. 74-N-8.

**CALLINAN, J. W.**

- (1917): *Flin Flon Lake copper district*, Engineering and Mining Jour., vol. 103, p. 303-304, 1 fig.

An early account of the history of development in the Flin Flon area. The geology is treated only briefly. 63-K-13.

**CAMERON, A. E.**

- (1935): *Geology and mineral occurrences at Beaverlodge, Saskatchewan*, Can. Inst. Mining and Metal., Bull. 282, p. 520-523.

Brief general review of the geological history and the mineral occurrences in the gold-bearing belt in the vicinity of Beaverlodge. 74-N-9.

**CAMPBELL, W. P.**

- (1929): *Oil-field waters of Alberta and Saskatchewan*, Can. Inst. Mining and Metal., Trans., vol. 32, p. 316-334, 7 figs.

Paper deals with the general nature of oil field waters, their classification and analysis. Specific examples are taken mainly from Alberta. Analyses of waters from wells in the Saskatoon area are graphically presented. Sed. Sask.; 73-B-2.

**CAMSELL, CHARLES**

- (1916a): *Reported occurrence of silver in the neighborhood of Fond du lac, Lake Athabasca, Saskatchewan*, Geol. Survey Canada, Summary Rept. 1915, p. 120-126.

Investigation showed that no silver is likely to occur in economic deposits in the area. Nickel and copper are present. Short description of general geology precedes discussion of the mineral deposits. 74-O-7.

- (1916b): *An exploration of the Tazin and Tallson Rivers, Northwest Territories*, Geol. Survey Canada, Mem. 84, 124 pages, 18 plates, geol. map (G.S.C. Map No. 186A).

Description of rock types encountered in exploration of northwest corner of Sask. Map on scale 1 inch to 8 miles. 74-K-N.

**CHALMERS, ROBERT**

- (1906a): *Surface geology of the Great Plains and British Columbia, etc.*, Geol. Survey Canada, Summary Rept. 1906, p. 74-80.

Sask. is mentioned only very briefly and emphasis is placed on the topography of the route travelled. Remarks made about glacial deposits. Section in Quaternary beds of South Sask. River given. 72-O-2.

- (1906b): *Surface geology of Manitoba, Saskatchewan and Alberta*, Geol. Survey Canada, Summary Rept. 1905, p. 67-69.

Describes route of travel during fieldwork. Not much geological information. 62, 72.

**CHAMBERS, E. J.**

- (1914): *The unexploited west, a compilation of all the authentic information available at the present time as to the natural resources of the unexploited regions of northern Canada*, Ottawa, Dept. of Interior Canada, 380 pages, ill.

A popular account of natural resources in northwestern Canada. One chapter devoted to the economic minerals of northern Sask. In it is mentioned the occurrence of tar sands at Buffalo Narrows. Most of the other information given is compiled and therefore obtainable elsewhere. Contains an extensive bibliography of the early explorations in the Northland. Prec. Sask., 73-N-15.

**CHANTLER, H. McD. et al.**

- (1951): *Analyses of Canadian crude oils*, Mines Branch, Canada Dept. Mines, Rept. No. 832, 90 pages.

Physical and chemical properties are given of crudes collected from three wells in the Lloydminster field and of one crude from Vera. 73-C-11; 73-F-5.

**CHRISTIE, A. M. and KESTEN, S. N.**

- (1949a): *Goldfields and Martin Lake map-areas, Saskatchewan*, Geol. Survey Canada, Paper 49-17, 32 pages, 2 geol. maps, 9 figs.

Main reference to the uranium mineral properties in this area. Rock types fully discussed. Suggestions to prospectors given. For more mineralogical detail see ROBINSON (1950). For adjacent area. BLAKE (1951). Scale of map  $\frac{1}{2}$  mile to 1 inch. 74-N-7,8,9,10

- (1949b): *Pitchblende occurrences of the Goldfields area, Saskatchewan*, Can. Inst. Mining and Metal., Trans., vol. 52, p. 285-293, 9 figs.

Major reference to the various properties in this area, which are described individually. A brief outline of the general geology and a history of development are included. Geological sketch maps of several properties are presented. 74-N-7,8,9,10.

**CLAPP, F. G.**

- (1915): *Petroleum and natural gas resources of Canada*, Mines Branch, Dept. of Mines Canada, Rept. No. 291, vol. II, 404 pages, 12 plates, 23 figs., 3 maps.

Compilation of previously published material. Gives summary of stratigraphical and structural geology as known at the time of publication. Several well logs are included. Sed. Sask.; 62-E-2; 62-M-12; 63-E; 72-I-2,5,6,7,9; 72-K-9; 72-O-9; 73-B-2, 73-C-16.

**COLE, L. H.**

- (1915): *Report on the salt deposits of Canada and the salt industry*, Mines Branch, Dept. of Mines Canada, Rept. No. 325, 152 pages, 27 plates, 25 figs., 4 maps.

Brief mentioning of one Sask. salt occurrence north of Cypress Hills in playa lakes. 72-F-4.

- (1924a): *Sodium and magnesium salts of western Canada*, Can. Inst. Mining and Metal., Trans., vol. 27, p. 209-247, 8 plates.

The mode of occurrence, chemical composition and methods of investigation are discussed in general, followed by a description of individual occurrences of sodium sulphate in Sask. Sed. Sask.; 72-H-4,11; 72-K-6; 72-N-13; 73-A-5; 73-C-1,5.

- (1924b): *Sodium and magnesium salts of western Canada*, Mines Branch, Dept. of Mines Canada, Rept. No. 616 (Investigations of minerals resource and the mining industry, 1923), p. 47-53.

Preliminary report to COLE (1926), describing in detail 5 deposits in southern Sask. 72-H-7, 72-H-11; 72-I-14; 72-K-6.

- (1924c): *Volcanic ash near Waldeck, Saskatchewan*, Mines Branch, Dept. of Mines Canada, Summary Rept. 1922, p. 15-20, 1 fig.

Main reference to this particular deposit. Some discussion of the geology. Composition and technological character of ash given. 72-J-5.

- (1926): *Sodium sulphate of western Canada, occurrence, uses and technology*, Mines Branch, Dept. of Mines Canada, Rept. No. 646, 160 pages, 15 plates, 16 figs., 22 maps.

The general topography of the western plains and the origin of the sodium sulphate deposits are discussed. A classification of these deposits as well as description of individual occurrences is included. Main reference to sodium sulphate in Canada, and in particular Sask. Sed. Sask.; 72-H-1,2,7,11; 72-I-4,14; 72-K-2,6,7,9,10; 72-N-5,13; 72-O-4; 73-A-4,15; 73-B-2; 73-C-1,12.

- (1928): *Silica in Canada. Its occurrence, exploitation, and uses. Part II—Western Canada*, Mines Branch, Dept. of Mines Canada, Rept. No. 686, 59 pages, 6 plates, 7 figs.

Sands from The Great Sand Hills, Willows and Wapawekka Lake are described. Screen analyses given. No geological information other than physical and chemical properties of these sands. 72-H-12; 72-K; 73-I-16.

- (1930): *The salt industry of Canada*, Mines Branch, Dept. of Mines Canada, Rept. No. 716, 116 pages, 15 plates, 31 figs., 2 maps.

Senlac Lake, in which the predominant salt is sodium chloride, is mentioned. Analysis of brine given, as well as history of this deposit. 73-C-5,11.

- (1948): *Potash discoveries in western Canada*, Can. Inst. Mining and Metal., Trans., vol. 51, p. 83-92, 4 figs.

Main reference to potash occurrences in Sask. The depth of the salt horizon is given for many wells. The results of chemical analyses are tabulated. Sed. Sask.

**COLLIER, A. J. and THOM, W. T.**

- (1918): *The Flaxville gravel and its relation to other terrace gravels of the northern great plains*, U. S. Geol. Survey, Prof. Paper 108-J, p. 179-184, 1 fig., 3 plates, map.

Mentions the Oligocene beds of the Cypress Hills in relation to other gravel deposits of the plains. 72.

**COLLINS, C. B. and FREEMAN, J. R.**

- (1951): *Geological age determinations in the Canadian shield*, Royal Soc. Canada, Trans., 3d ser., vol. 45, sec. 4, p. 23-30, 5 figs.

Examined were six samples from the Lake Athabaska area and one from Black Lake. The ages of these samples are given. The geology is not discussed. 74-N-10; 74-P-3.

**CONYBEARE, C. E. B.**

- (1948): *The Athabaska series, Goldfields area, Saskatchewan*, Abstract in: Northwest Science, vol. 22, p. 21.

Full length article appeared under different title. See CONYBEARE (1949a).

- (1949a): *Genesis and structure of the Athabaska series, Goldfields, Saskatchewan* Northwest Science, vol. 23, p. 165-174, 1 fig.

Fieldwork was done northwest of Beaverlodge Lake. Writer first summarized what is known about the Athabaska series (distribution, age, lithology, structure). The Athabaska series at Beaverlodge Lake is discussed as to thickness, lithology, genesis, structure. 74-N-10.

- (1949b): *Stylolites in pre-Cambrian quartzite*, Jour. Geol. vol. 57, p. 83-85, 1 fig., 1 plate.

The stylolites occur in quartzite exposed in the Ace Lake area near Goldfields. A description of the quartzite is given and the relationship of the stylolites to the quartzite is discussed. For discussion see SHAUB (1950) and CONYBEARE (1950). 74-N-10.

- (1950): *Microstylolites in Pre-Cambrian quartzite: A reply*, Jour. Geol., vol. 58, p. 652-654, 1 fig.

The writer replies to SHAUB (1950) who gave a different view on the origin of stylolites described by CONYBEARE (1949b) from the Ace Lake area near Goldfields. 74-N-10.

**CONYBEARE, C. E. B. and CAMPBELL, C. D.**

- (1951): *Petrology of the red radioactive zones north of Goldfields, Saskatchewan*, American Mineralogist, vol. 36, p. 70-79, 7 figs.

The mineralogical content and the paragenesis of the hematite rich rocks occurring in mylonitic zones along faults in granite are given. The origin of the red coloration is discussed. 74-N-7,8,9,10.

**CONYBEARE, C. E. B. and FERGUSON, R. B.**

- (1950): *Metamict pitchblende from Goldfields, Saskatchewan, and observations on some ignited pitchblendes*, American Mineralogist, vol. 35, p. 401-406, 4 figs.

X-ray powder diagrams of specimens collected from Ace and Black Lakes are presented. The powder pattern of many specimens from Sask. is discussed and tabulated. 74-N-9,10; 74-P-3,6.

**COOKE, H. C.**

- (1933): *Land and sea on the Precambrian shield in Precambrian time*, Am. Jour. Sci., 5th ser. vol. 26, p. 428-441, 3 maps (Part I), p. 451-474, 4 maps (Part II).

Summary of geologic history of shield area in Canada. Important regional paper with occasional reference to Sask. Prec. Sask.

- (1937a): *Goldfields area, Saskatchewan*, Geol. Survey Canada, Paper 37-3, 22 pages, 2 geol. maps.

Detailed study of the Athona mine and the Box property near Goldfields. Besides these two gold discoveries also the Dinty Lake nickel deposit is discussed. Maps on scale 1 inch to 200 feet. 74-N-7,8,9,10; 74-O-12.

- (1937b): *An unusual hypersthene from Lake Athabaska, Saskatchewan*, Toronto Univ. Studies, Geol. Ser., No. 40, p. 67-69.

Mineralogical description and chemical analysis of a very ferruginous hypersthene which is yet colourless and almost non-pleochroic. 74-O-12.

- (1946): *Canadian lode gold areas*, Geol. Survey Canada, Econ. Geol. Ser. No. 15, 86 pages, 9 figs.

Brief one paragraph description of the geological features of the gold deposits in the Goldfields region in a general discussion of the gold deposits of the Precambrian shield. 74-N-8.



COPE, E. D.

- (1875): *On the transition beds of the Saskatchewan district*, Academy Nat. Sci. Philadelphia, Proc., p. 9-10.

Brief account of the results of an examination of vertebrate fossils collected by G. M. Dawson from the Ravenscrag as exposed south of Wood Mountain. A list of the 8 species of reptiles is given. 72-G-1,2.

- (1885a): *The White River beds of Swift Current River, Northwest Territory*, Am. Naturalist, vol. 19, p. 163.

Ten vertebrate species are listed. The creodont *Hemipsalodon grandis* is described, but not figured. 72-F-10.

- (1886): *The vertebrata of the Swift Current Creek region of the Cypress Hills* Geol. Survey Canada, Annual Rept. (New ser.), vol. I, pt. C, p. 79-85.

Nine species of mammals are fully described, one of which is new. No illustrations. Two species of tortoises were also found. Main reference to the vertebrate content of the Cypress Hills conglomerate. 72-F-10,15.

- (1889a): *The vertebrata of the Swift Current River, II*, Am. Naturalist, vol. 23, p. 151-155.

A total of 17 vertebrate species is listed. The new material is fully described and includes several new species. No figures presented. 72-F-10.

- (1889b): *Vertebrata of the Swift Current River-No. III*, Am. Naturalist, vol. 23, p. 628-629.

Description of three new species without figures. 72-F-10.

- (1891): *On Vertebrata from the Tertiary and Cretaceous rocks of the North West Territory. I. The species from the Oligocene or Lower Miocene beds of the Cypress hills*, Geol. Survey Canada, Contr. to Can. Paleon., vol. 3, pt. 1, 25 pages, 14 plates.

Of most fossils described no exact locality is given other than Cypress Hills. All fossils are fully discussed and figured. Important references to the vertebrate paleontology of the Cypress Hills formation. See also LAMBE (1908). 72-F.

CUSHMAN, J. A.

- (1927): *Some Foraminifera from the Cretaceous of Canada*, Royal Soc. Canada, Trans., 3d ser., vol. 21, sec. 4, p. 127-132, 1 plate.

Description and illustration of foraminifera, some of which were obtained from the Imperial Boundary No. 1 and the Rush Lake well. Five new species described. 72-F-4; 72-J-11.

DAVIS, N. B.

- (1916): *The clays of southern Saskatchewan*, Mines Branch, Dept. of Mines Canada, Summary Rept. 1915, p. 141-144, 1 fig., 4 plates.

Outline of the economical clay deposits of southern Sask. Index map shows their extent. A section near Ravenscrag is given. See also DAVIS (1918). 62-E-3; 72-F-6; 10; 72-G-8; 72-H-12,13; 72-I-3.

- (1917): *Clay investigation in southern Saskatchewan*, Mines Branch, Dept. of Mines Canada, Summary Rept. 1916, p. 119-123, 5 plates.

Occurrences of clay, ochre and quartzite pebbles are described with emphasis on their economic value. See also DAVIS (1918). 62-E-2,3; 62-L-6,7,12; 72-I-7; 72-K-5.

- (1918): *Report on the clay resources of southern Saskatchewan*, Mines Branch, Dept. of Mines Canada, Rept. No. 468, 93 pages, 21 plates, 1 fig., 2 geol. maps.

A major reference to the clay of southern Sask. Brief discussion of the general geology is followed by an extensive study of the technology of the clays. 62, 72.

DAWSON, G. M.

- (1874): *Report on the Tertiary lignite formation, in the vicinity of the forty-ninth parallel*, British North American Boundary Commission, Geol. Rept., Progress 1873, Montreal, 31 pages, 2 plates.

Many sections measured in the Estevan district and west of Big Muddy Valley are given. These are followed by general remarks on the coal bearing strata and a discussion of their economic value. 62-E-2; 72-H-2,3,4.

- (1875a): *On the superficial geology of the central region of North America*, Quart. Jour. Geol. Soc., London, vol. 31, p. 603-623, 2 figs., 1 plate.

Description of the major physiographic divisions of the plains. Includes discussion about the Pleistocene deposits covering the area. Sed. Sask.

- (1875b): *Report on the geology and resources of the region in the vicinity of the forty-ninth parallel from the Lake of the Woods to the Rocky Mountains*, British North American Boundary Commission, Montreal, 387 pages, 18 plates, geol. map, sections.

Main emphasis on the stratigraphy of the coal bearing strata of southern Sask. and the problem of the Cretaceous-Tertiary boundary. Many sections given. 62-E,F; 72-F,G,H.

- (1875c): *The lignite formations of the west*, Can. Naturalist, New ser. vol. 7, p. 241-252.

In a general discussion of the coal deposits in the western part of the North American continent several pages are devoted to the lignites of south-eastern Sask. The stratigraphy is discussed and sections given. Fossils, previously identified, are mentioned. 62-E-2.

- (1881): *On the lignite Tertiary formation, from the Souris River to the 108th meridian*, Geol. Survey Canada, Rept. of Progress 1879-1880, pt. A, p. 12-49.

This paper is an appendix to SELWYN (1881). Deals mainly with stratigraphy, giving many measured sections. Important reference to the Tertiary strata of southern Sask. 62,72.

- (1883): *Descriptive note on a general section from the Laurentian axis to the Rocky Mountains north of the 49th parallel*, Royal Soc. Canada, Trans., 1st. ser., vol. 1, sec. 4, p. 39-44, 1 plate.

Presented is a diagrammatic section from Lake Winnipeg to the Rocky Mountains. Shown on this section are the Porcupine Mountain and Touchwood Hills, as well as the Missouri Coteau in Sask. Several discussions of the Cretaceous and Tertiary of the Plains. Sed. Sask.

- (1885): *The Saskatchewan country*, Science, vol. 5, p. 340-342.

Brief description of the topography and routes of travel in southern Sask. Sed. Sask.

## DAWSON, SIR J. W.

- (1875): *Note on the plants collected by Mr. G. M. Dawson, from the lignite Tertiary deposits near the forty-ninth parallel*, Appendix A in DAWSON, G. M. (1875), p. 327-331, 2 plates.

Plants were collected from Porcupine Creek (now Poplar River) and from the Great Valley (south of Big Beaver) in southern Sask. east of Wood Mountain. Most species are listed only, a few described. 72-H,3,4.

- (1881): *Fossil plants in the lignite Tertiary formation of Roche Percee, Souris River*, Geol. Survey Canada, Rept. of Progress 1879-1880, pt. A, p. 51-55

This paper is an appendix to SELWYN (1881). Describes but does not figure 5 plant fossils of which one new species. 62-E-2.

- (1886): *On the fossil plants of the Laramie formation of Canada*, Royal Soc. Canada, Trans., 1st. ser., vol. 4, sec. 4, p. 19-34, 2 plates.

Describes and figures several plants collected from the Tertiary coal bearing strata in the Souris River valley. Stratigraphy is not discussed. 62-E.

- (1888): *Note on fossil woods and other plant remains from the Cretaceous and Laramie formations of the western territories of Canada*, Royal Soc. Canada, Trans., 1st. ser., vol. 5, sec. 4, p. 31-37.

Description (no figures) of Cretaceous plants from Cypress Hills and Tertiary plants from Souris River valley. 62-E; 72-F.

## DAWSON, K. R.

- (1951): *A petrographic description of the wall-rocks and alteration products associated with pitchblende-bearing veins in the Goldfields region, Saskatchewan*, Geol. Survey Canada, Paper 51-24, 58 pages, 5 figs.

A brief introduction to the geology of the region is provided. Three chapters give information on the wall-rock alterations of the Ace Lake mine, Martin Lake mine and Tam prospect respectively. Of these three properties geological sketch maps are included and their geology is discussed. 74-N-9,10.

## DAWSON S. J.

- (1859): *Report on the exploration of the country between Lake Superior and the Red River settlement and between the latter place and the Assiniboine and Saskatchewan*, Toronto, 45 pages (not numbered), maps.

Describes mainly topographic features along the Sask. river route explored in connection with the Red River exploring expedition (see HIND, 1860) of 1857. Fossils collected are described by BILLINGS (1859). Sed. Sask.

## DeLURY, J. S.

- (1916): *The mineral belt north of The Pas, Manitoba*, Can. Mining Jour., vol. 37, p. 412-414, 5 figs.

An early account of the sulphide ore-deposits in the Flin Flon district. Article is of a general nature. 63-K-13.

- (1926): *Wapawekka and Deschambault lakes area, Saskatchewan*, Geol. Survey Canada, Summary Rept., 1924, pt. B, p. 23-50, geol. map (G.S.C. Map No. 2078).

Main reference to this area, which embraces Pre-cambrian rocks as well as post-Precambrian sedimentary strata. All rocks mapped are well described including some structural information. Map on scale 1 inch to 2 miles. 63-L-11,12,13,14, 73-K-9,10, 15,16.

## DEPT. OF MINES

- (AIR) *Air photographic coverage*, National Air Photographic Library, Dept. of Mines and Technical Surveys, Ottawa.

An index map, under the above title is issued periodically by the National Air Photographic Library. A recent index map to air photos covering Saskatchewan is included in the present report (Map no. 2).

## DEPT. OF MINES

- (TOP.) *Map sheets of the National Topographic Series, and of the Sectional map*, Map Distribution Office, Dept. of Mines and Technical Surveys, Ottawa.

Up to date index maps showing all topographic sheets may be obtained from the Map Distribution Office. The following is a list of all topographic maps covering part of Saskatchewan for sale at the above mentioned agency. The maps are grouped according to scale. Of each map the sequence of information given is as follows: number of entry, name of map sheet, year of publication of most recent issue, index number indicating the area covered by the sheet according to the National Topographical System.

### A. Topographic map sheets on scale 16 miles to 1 inch.

The World Aeronautical Charts (I.C.A.O.) which are also part of the National Topographic Series, are on a scale of 1:1,000,000 or nearly 16 miles to 1 inch. They are available with or without air information. Six sheets cover Saskatchewan, one of which is not yet published. The number preceding the map is the I.C.A.O. number.

- |  |      |    |
|--|------|----|
| 1. 2218. Assiniboine River.....        | 1950 | 62 |
| 2. 2183. Carrot River.....             | 1950 | 63 |
| 3. 2217. South Saskatchewan River..... | 1951 | 72 |
| 4. 2184. North Saskatchewan River..... | 1949 | 73 |
| 5. 2141. Clearwater River.....         | 1950 | 74 |

In addition to these charts the following maps are on a scale of 16 miles to 1 inch or nearly so.

6. Saskatchewan  
Two sheets. On scale 16 miles to 1 inch.  
North sheet (township 62 to 60th parallel) 1939 ) Sask.  
South sheet (townships 1 to 61) 1938 )

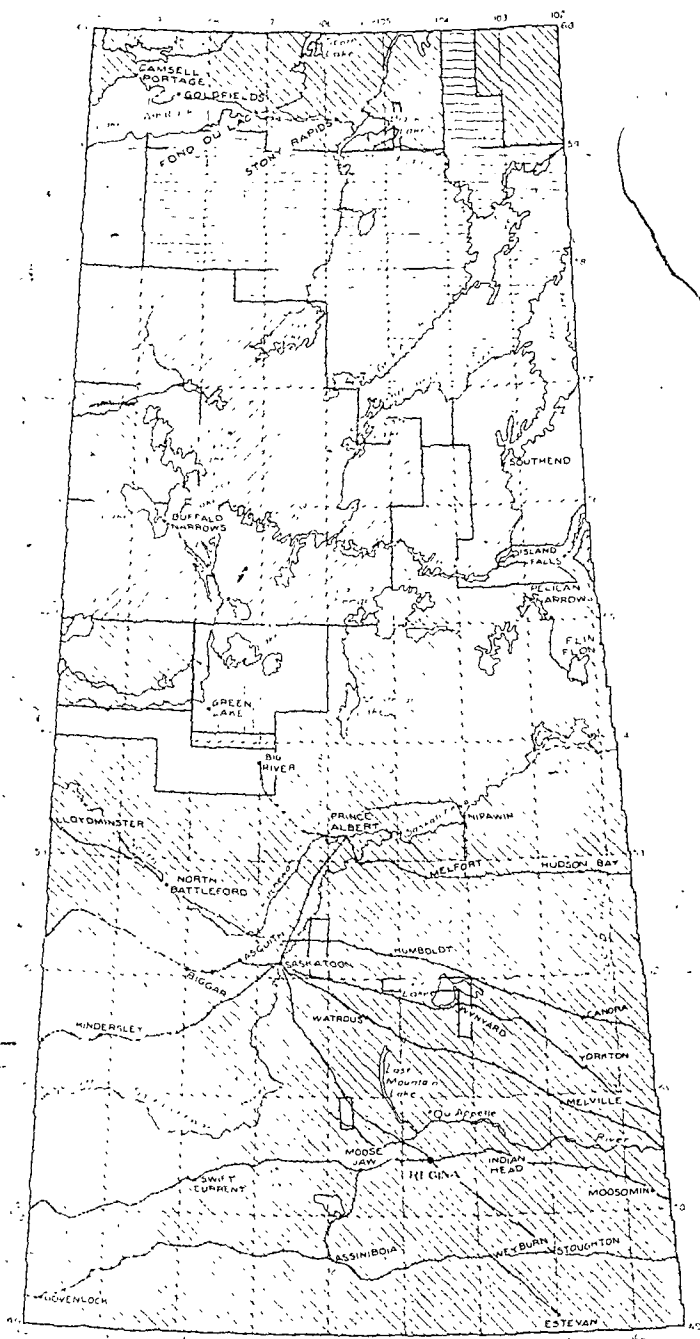
7. Regina  
Sheet N.M.-13 of the International Map of the  
World 1:1,000,000, which is a scale of 15.78 miles  
to 1 inch.

1928 62-E,L,M  
72 (East half)

### B. Topographic map sheets on scale 8 miles to 1 inch.

Also available with overprint as aeronautical charts. These maps together cover the entire province. Contoured sheets are indicated by the letter C following the name. Preliminary editions are followed by the letter P.

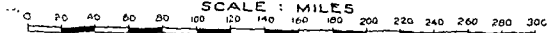
- |                                   |   |      |            |
|-----------------------------------|---|------|------------|
| 8. Indian Head—Brandon.....       | C | 1939 | 62-E,F,K,L |
| 9. Broadview—Dauphin.....         | C | 1951 | 62-K,L,M,N |
| 10. Pasquia Hills—Swan River..... | C | 1947 | 63-C,D,E,F |
| 11. Flin Flon.....                | C | 1943 | 63-K,L,M,N |







MAP No. 2  
AIR PHOTOGRAPHIC COVERAGE  
OF

# SASKATCHEWAN

SCALE : MILES



## LEGEND

- |  |  |
|--|--|
|  RCAF OBLIQUE     |  RCAF TRIMETROGON                   |
|  FEDERAL VERTICAL |  COMMERCIAL AND PROVINCIAL VERTICAL |

DECEMBER, 1950

12.	Reindeer Lake .....	P	1948	64-C,D,E,F
13.	Wollaston Lake .....	P	1950	64-K,L,M,N
14.	Medicine Hat—Maple Creek .....	C	1950	72-F,K
15.	Swift Current—Regina .....	C	1943	72-G,H,I,J
16.	Moose Jaw—Watrous .....	C	1951	72-I,J,O,P
17.	Hanna—Kindersley .....	C	1951	72-K,N
18.	Saskatoon—Prince Albert .....	C	1951	73-A,B,G,H
19.	Wainwright—Battleford .....	C	1940	73-C,F
20.	Green Lake—Stanley .....	C	1950	73-I,J,O,P
21.	Lac la Biche—Peter Pond .....	C	1946	73-K,N
22.	Mudjatic—Ceikie .....	P	1948	74-A,B,G,H
23.	McMurray .....	C	1945	74-C,F
24.	Black Lake .....	P	1949	74-I,J,O,P
25.	Lake Athabaska .....	P	1946	74-K,N

#### C. Topographic map sheets on scale 6 miles to 1 inch.

This is a discontinued series and replaced by the more detailed 8 miles to 1 inch maps.

26.	The Pas Mineral Area .....	1928	63-K,L (East half), M (East half), N
27.	Reindeer Lake .....	1928	64-C,D (East half), E (East half), F,K,L (East half).
28.	Fond du Lac River Basin .....	1929	64-L,M; 74-I,P
29.	Lake Athabaska .....	1929	74-J (North half), K (North half), N,O.

#### D. Topographic map sheets on scale 4 miles to 1 inch.

None of these sheets are contoured.

30.	The Pas .....	1950	63-F
31.	Cormorant Lake .....	1948	63-K
32.	Amisk Lake .....	1949	63-L
33.	Pelican Narrows .....	1950	63-M
34.	Kississing .....	1949	63-N
35.	Reindeer Lake South .....	1947	64-D
36.	Reindeer Lake North .....	1937	64-E
37.	Wollaston Lake (Scale 1:250,000) .....	1951	64-L
38.	Prince Albert .....	1933	73-H
39.	Green Lake .....	1932	73-J
40.	Dillon .....	1932	73-N
41.	Ile-a-la-Crosse .....	1932	73-O
42.	Lac la Ronge .....	1948	73-P
43.	Foster Lake .....	1950	74-A
44.	Mudjatic .....	1933	74-B
45.	Clearwater .....	1939	74-F
46.	Cree Lake .....	1939	74-G
47.	Tazin Lake .....	1950	74-N
48.	Fond-du-Lac .....	1950	74-O
49.	Stony Rapids .....	1949	74-P

#### E. Topographic map sheets on scale 3 miles to 1 inch.

This group comprises the sheets of the Sectional Map. Most of the sheets are nearly 30 years old but some were reprinted recently with corrections.

Three categories of sheets are recognized:

New Series—In eight colours with complete topographical detail and covering the more highly developed districts. Accurate 50 feet contours.

Intermediate Series—In five colours with road information in red. Conjectural 100 feet contours.

Old Series—No road information. Roughly contoured, hachured or without contours. In from two to four colours, with information compiled largely from the original cadastral survey.

These sheets do not correspond to the National Topographic System and therefore the index in the last column is only approximate. The number of the map precedes the name. Contoured sheets are indicated by the letter C following the name. N stands for New Series, I for Intermediate Series and O for Old Series.

50.	20	Weyburn .....	C,N	1927	62-E-1,2,3,4,5,6,7,8,9,10,11,12
51.	70	Moose Mountain .....	C,N	1940	62-E-13,14,15,16 62-L-1,2,3,4,5,6,7,8
52.	21	Turtle Mountain .....	C,N	1922	62-F-3,4,5,6,11,12
53.	71	Virden .....	C,N	1923	62-F-13,14; 62-K-3,4,5,6
54.	121	Riding Mountain .....	C,O	1942	62-K-11,12,13,14; 62-N-3,4
55.	120	Qu'Appelle .....	C,N	1916	62-L-5,6,7,8,9,10,11,12,13,14, 15,16; 62-M-1,2,3,4.
56.	170	Yorkton .....	C,N	1926	62-M-1,2,3,4,5,6,7,8,9,10,11,12.

57.	220	Nut Mountain	-O	1916	62M-13,14,15,16; 63-D-1,2,3,4,5,6,7,8
58.	171	Duck Mountain	C,O	1915	62-N-3,4,5,6,11,12,13,14
59.	221	Swan River	C,O	1919	62-N-13; 63-C-4,5
60.	270	Pasquia	C,I	1923	63-D-9,10,11,12,13,14,15,16; 63-E-1,2,3,4
61	271	Mossy Portage	C,I	1924	63-D-12,13; 63-F-4
62.	320	Carrot River	-O	1916	63-E-5,6,7,8,9,10,11,12,13,14, 15,16
63	370	Cumberland	-O	1915	63-E-13,14,15,16; 63-L-1,2,3,4,5,6,7,8
64.	321	Cedar Lake	C,O	1918	63-F-5,12,13
65.	371	Cowan River	-O	1916	63-F-13; 63-K-4,5
66.	421	Kississing	-O	1918	63-K-12,13; 63-N-4
67.	17	Cypress	-O	1914	72-F-1,2,3,4,5,6,7,8,9,10,11,12,
68.	67	Maple Creek	C,N	1925	72-F-13,14-15,16; 72-K-1,2,3,4,5,6,7,8
69.	18	Wood Mountain	C,I	1930	72-C-1,2,3,4,5,6,7,8,9,10,11,12
70.	68	Swift Current	C,N	1924	72-C-13,14,15,16; 72-J-1,2,3,4,5,6,7,8
71.	19	Willowbunch	C,I	1930	72-H-1,2,3,4,5,6,7,8,9,10,11,12
72.	69	Moose Jaw	C,N	1921	72-H-13,14,15,16; 72-I-1,2,3,4,5,6,7,8
73.	119	Regina	C,N	1921	72-I-5,6,7,8,9,10,11,12,13,14, 15,16
74.	118	Rush Lake	C,N	1925	72-J-5,6,7,8,9,10,11,12,13,14, 15,16
75.	117	Red Deer Forks	-O	1915	72-K-9,10,11,12,13,14,15,16; 72-N-1,2,3,4
76.	167	Kindersley	C,N	1932	72-N-5,6,7,8,9,10,11,12,13,14, 15,16
77.	1752	Monitor (Other Series)	C	1920	72-N-12,13; 73-C-4,5
78.	217	Tramping Lake	C,N	1945	72-N-13,14,15,16; 73-C-1,2,3,4,5,6,7,8
79.	168	The Elbow	C,N	1923	72-O-1,2,3,4,5,6,7,8,9,10,11,12
80.	218	Saskatoon	C,N	1927	72-O-13,14,15,16; 73-B-1,2,3,4,5,6,7,8
81.	169	Touchwood	C,N	1927	72-P-1,2,3,4,5,6,7,8,9,10,11,12
82.	219	Humboldt	C,N	1929	72-P-13,14,15,16; 73-A-1,2,3,4,5,6,7,8
83.	269	Prince Albert South	-O	1916	73-A-9,10,11,12,13,14,15,16
84.	268	Carlton	C,I	1935	73-B-9,10,11,12,13,14,15,16; 73-G-1,2,3,4
85.	267	Battleford	C,N	1928	73-C-9,10,11,12,13,14,15,16; 73-F-1,2,3,4
86.	317	Fort Pitt	C,O	1918	73-F-5,6,7,8,9,10,11,12,13,14, 15,16
87.	318	Big River	C,I	1925	73-G-5,6,7,8,9,10,11,12
88.	368	Green Lake	C,O	1918	73-G-13,14,15,16; 73-J-1,2,3,4,5,6,7,8
89.	319	Prince Albert North	C,O	1918	73-H-5,6,7,8,9,10,11,12
90.	369	Montreal Lake	-O	1914	73-H-13,14,15,16; 73-I-1,2,3,4,5,6,7,8
91.	418	La Plonge	-O	1914	73-J-9,10,11,12,13,14,15,16; 73-O-1,2,3,4
92.	367	Meadow Lake	C,O	1918	73-K-1,2,3,4,5,6,7,8,9,10,11,12
93.	417	Primrose	-O	1915	73-K-9,10,11,12,13,14,15,16; 73-N-1,2,3,4
94.	467	Dillon	C,O	1919	73-N-5,6,7,8,9,10,11,12,13,14, 15,16
95.	517	Methy	C,O	1919	74-C-1,2,3,4,5,6,7,8,9,10,11,12

#### F. Typographic map sheets on scale 2 miles to 1 inch.

None of these sheets are contoured.

96.	Etomami	1949	63-D-9,10,15,16
97.	Mistatim	1948	63-D-11,12,13,14
98.	Pasquia	1948	63-E-1,2,7,8
99.	Arborfield	1948	63-E-3,4,5,6
100.	Cumberland House	1949	63-E-9,10,15,16
101.	Ravendale	1949	63-E-11,12,13,14

#### G. Topographic map sheets on scale 1 mile to 1 inch.

For other map sheets on this scale, that can be used as base maps see FORESTRY BRANCH (1950-1951) In the following list contoured sheets are indicated by the letter C following the name.

For the "A" series the number of the map precedes the name.

102. McLean .....	C	1941	62-L-12, 72-I-9.
103. 601A, Schist Lake .....		1940	63-K-12
104. Denare Beach .....		1951	63-L-9
105. Hanson Lake .....		1949	63-L-10
106. Birch Portage .....		1951	63-L-15
107. Annabel Lake .....		1951	63-L-16
108. Duval Lake .....		1950	63-N-4
109. Saskatoon .....	C	1941	73-B-2
110. Pierceland .....		1950	73-K-5
111. Goodsoil .....		1950	73-K-6
112. Dorintosh .....		1951	73-K-7
113. Waterhen Lake .....		1951	73-K-9
114. Flotten Lake .....		1951	73-K-10
115. Muskeg Lake .....		1951	73-K-11
116. Cold River .....		1950	73-K-12
117. Primrose Lake .....		1950	73-K-13
118. Lost Lake .....		1950	73-K-15
119. Keeley Lake .....		1950	73-K-16
120. Stanley .....		1951	73-P-7
121. Nistowiak Lake .....		1951	73-P-8
122. Guncoat Bay .....		1951	73-P-9
123. Forbes Lake .....		1951	73-P-15
124. Settee Lake .....		1951	73-P-16
125. Maribelli Lake .....		1950	74-A-1
126. 599A, Crackingstone .....		1941	74-N-7
127. 582A, Goldfields .....		1940	74-N-8
128. 629A, Forget Lake .....		1941	74-N-9 (East half)
129. 864A, Lowe Lake .....		1946	74-O-7
130. 863A, Wiley Lake .....		1946	74-O-8
131. 663A, Nevins Lake .....		1941	74-O-12 (West half)

#### H. Miscellaneous topographic sheets.

132. Manitoba, Saskatchewan, and Alberta			
On scale 35 miles to 1 inch. Printed in black and water blue only...	1942	Sask.	
133. Manitoba, Saskatchewan and Alberta.			
Physical and climatic map. On scale 35 miles to 1 inch. Showing elevations by layered tints.....	1924	Sask.	
134. Prince Albert Park			
On scale 2.37 miles to 1 inch .....	1931	73-G-9,10,15,16; 73-H-12,14; 73-I-4,5; 73-J-1,2,7,8	

#### DEPT. NAT. RES.

##### *Annual Report,*

These reports have been published by the Prov. of Sask., Dept. of Nat. Res., yearly since 1931 and provide general information regarding the mineral wealth of the province, production statistics, mining development etc. No separate entries were made for the various parts of these reports except for those parts that contain information not obtainable elsewhere.

#### DEPT. NAT. RES.

##### *Schedule of wells,*

See under ANONYMOUS (1951).

#### DEPT. OF SOILS

(1923a): *Soil survey of Baildon Municipality No. 131, Hillsborough Municipality No. 132, Moose Jaw Municipality No. 161 and Caron Municipality No. 162, Univ. of Sask., Soil Survey Rept., No. 1, 47 pages, 12 figs., 1 soil map.*

This and the following soil reports all contain a physiographic description of the area mapped as well as a description of the various soil types. For Soil Survey Rept. 11, 12 and 13 see MITCHELL et al. (1942, 1944 and 1950). 72-I-3,4,5,6.

(1923b): *Soil Survey of Swift Current Municipality No. 137, Webb Municipality No. 138, Saskatchewan Landing Municipality No. 167 and Riverside Municipality No. 168, Univ. of Sask., Soil Survey Rept. No. 2, 57 pages, 12 figs., 1 soil map. 72-J-4,8,12; 72-K-1,8,9.*

- (1925): *Soil survey of Local Improvement Districts Nos. 21, 22 and 52 and Reno Municipality No. 51*, Univ. of Sask., Soil Survey Rept., No. 3, 46 pages, 11 figs., 1 soil map. 72-F-3,4,5,6.
- (1926a): *Soil survey of Weyburn Municipality No. 67, Brokenshell Municipality No. 68, Wellington Municipality No. 97, and Scott Municipality No. 98*, Univ. of Sask., Soil Survey Rept., No. 4, 55 pages, 12 figs., 1 soil map. 62-E-12,13; 72-H-9, 15.
- (1926b): *Soil survey of the Bienfait-Oxbow area, including the municipalities of Enniskillen No. 3, Coalfields No. 4, Moose Creek No. 33, and Browning No. 34*, Univ. of Sask., Soil Survey Rept. No. 5, 68 pages, 13 figs., 1 soil map. 62-E-1,2,7,8.
- (1927): *Soil survey of the Rosetown area including the municipalities of St. Andrews No. 287, Pleasant Valley No. 288, Marriott No. 317, Mountain View No. 318*, Univ. of Sask., Soil Survey Rept., No. 6, 52 pages, 8 figs., 1 soil map. 72-N-8,9,16; 72-O-5,12,13.
- (1928): *Soil survey of the Birch Hills-Melfort area, including the municipalities of Carrot River No. 429, Invergordon No. 430, Weldon No. 459, Birch Hills No. 460*, Univ. of Sask., Soil Survey Rept., No. 7, 61 pages, 12 figs., 1 soil map. 73-A-10,11,14,15; 73-H-2,3.
- (1929): *Soil survey of the Leider-Maple Creek area, including the municipalities Nos. 109, 110, 111, 139, 141, 142, 169, 171, 172, 229, 230, 231, 232; and Local Improvement Districts Nos. 112, 140, 170*, Univ. of Sask., Soil Survey Rept., No. 8, 58 pages, 12 figs., 1 soil map. 72-K.
- (1931): *Soil survey of southwestern Saskatchewan from the third meridian on the east to the Alberta boundary on the west, and from the top of township 16 on the north to the International Boundary on the south*, Univ. of Sask., Soil Survey Rept., No. 9, 81 pages, 25 figs., 2 soil maps. 72-F,G,J,K.
- (1936): *Reconnaissance soil survey of Saskatchewan from the International Boundary on the south to the top of township 48 on the north*, Univ. of Sask., Soil Survey Rept., No. 10, 120 pages, 41 figs., 3 sketch maps. Sed. Sask.

#### DOUGLAS, R. J. W.

- (1942): *New species of Inoceramus from the Cretaceous Bearpaw formation*. Royal Soc. Canada, Trans., 3d ser., vol. 36, sec. 4, p. 59-65, 3 plates.

Systematic description of fossils collected in the Cypress Hills area. Specimens are figures. No discussion of stratigraphic sequence. 72-F-13.

#### DOWLING, D. B.

- (1902): *Report on geological explorations in Athabaska, Saskatchewan and Keewatin Districts, including Moose Lake and the route from Cumberland Lake to the Churchill River, and the upper parts of Burntwood and Grass Rivers*, Geol. Survey Canada, Annual Rept., (New ser.), vol. XIII, 1900, Rept. FF, 44 pages, 2 plates, 1 fig., geol. map (same as in TYRRELL, 1902, G.S.C. Map No. 766).

Reconnaissance survey. Occasional references to the Paleozoic rocks of east-central Sask. See also TYRRELL (1902). Map on scale 1 inch to 8 miles. 63-E-16; 63-F-13; 63-K-4,5.

- (1903): *Eastern Assiniboia and southern Manitoba*, Geol. Survey Canada, Summary Rept. 1902, p. 180-183.

Primarily a description of field activities, with some geological information on south eastern Sask. in the vicinity of Estevan. 62-E-2; 62-E,F.

- (1904): *Report on the coal fields of the Souris River, eastern Assiniboia*, Geol. Survey Canada, Annual Rept., (New ser.), vol. XV, 1902-1903, Rept. F, 45 pages, 7 plates.

Detailed description of the Souris coal fields, near Estevan, Sask. The stratigraphy of the area is discussed with many sections given. No technical data on the coal. 62-E-2.

- (1909): *Steam coals of the Cascade basin. Lignite areas of Alberta and Saskatchewan. Production of coal in Alberta and Saskatchewan*, Geol. Survey Canada, Summary Rept. 1908, p. 77-86.

Brief description of coal seams near Eagle Hill Creek and the Dirt Hills. Production of coal in Sask. given in tabulated form. 72-H-14, 72-N-9.



- (1912): *Notes on coal occurrences and the progress of development work in Alberta and Saskatchewan*, Geol. Survey Canada, Summary Rept. 1911, p. 219-224.

Only Sask. occurrence mentioned is that in Belly River beds near Brock. Coal analysis given and development work described. 72-N-7.

- (1913a): *Winnipeg to Bankhead*, Geol. Survey Canada, Guide Book No. 8, pt. 1, p. 77-101, 5 plates.

General discussion of the topography and geology of the Prairie Provinces. The annotated travel guide mentions several places along the C.P.R. main line in Sask. The guide books were written for excursions in connection with the XIIth session of the International Geological Congress. Sed. Sask.

- (1913b): *Calgary, Alberta, to Winnipeg, Manitoba, via Grand Trunk Pacific Railway*, Geol. Survey Canada, Guide Book No. 9, p. 131-149, 6 plates. See also DOWLING (1913a).

This travel guide follows what is now the C.N.R. main line. Sed. Sask.

- (1914): *Coal fields of Manitoba, Saskatchewan, Alberta, and eastern British Columbia*, Geol. Survey Canada, Mem. 53, (Rev. Ed.), 142 pages, map, 9 plates.

General discussion of stratigraphy, paleontology, and economic geology connected with coal in prairie provinces with short references to specific Sask. coal occurrences. 62; 72.

- (1915a): *Coal fields and coal resources of Canada*, Geol. Survey Canada, Mem. 59, 174 pages, 7 maps, 9 figs.

Short description and some tabulated technical data on coals in southern Sask. Includes map of coal fields of Manitoba and Saskatchewan. 62-E-2; 72-F-14; 72-F-G. H; 72-N-7, 14; 73-C-4, 6; 73-I-15.

- (1915b): *The Cretaceous sea in Alberta*, Royal Soc. Canada, Trans., 3d ser., vol. 9, sec. 4, p. 27-42, 11 plates.

General discussion of Cretaceous stratigraphy and paleogeography of Alberta with some overlap into Sask. Sed. Sask.

- (1918): *Potash in saline waters in Saskatchewan*, Geol. Survey Canada, Summary Rept. 1917, pt. C, p. 3-4.

Gives chemical analyses of surface waters collected near Quill Lake and Weyburn in which small amounts of potash were found. 62-E-12; 72-P-16.

- (1919): *The problem of the "burn-out" district of southern Saskatchewan*, Royal Soc. Canada, Trans., 3d ser., vol. 13, sec. 4, p. 61-66, 2 plates.

Discusses the origin of "burn-outs" and the typical soil profile of this district. The problems of resettling this area are considered. 62-E-3, 6, 12; 72-H-16; 72-I-2.

- (1920a): *Oil possibilities and developments in the Great Plains*, Geol. Survey Canada, Summary Rept. 1919, pt. C, p. 20-24, geol. map.

Deals briefly and generally with the Devonian underlying Sask. Sed. Sask.

- (1920b): *The Turtle Mountain coal measures*, Royal Soc. Canada, Trans., 3d ser., vol. 14, sec. 4, p. 35-43, 2 plates.

General discussion of the stratigraphy of the Plains area including some reference to southeastern Sask. Stratigraphic sections are presented in which data from shallow wells are used. 62-E.

- (1921a): *Review of prospecting for oil on the Great Plains*, Geol. Survey Canada, Summary Rept. 1920, pt. B, p. 11-25, 8 figs.

The chapter dealing with Sask. describes the geology of an area south of Cypress Hills. The Cretaceous stratigraphy is briefly discussed. The structural pattern is mentioned. 72-F-4.

- (1921b): *Underlying seams of the Souris coal field, southeastern Saskatchewan*, Geol. Survey Canada, Summary Rept. 1920, pt. B, p. 26-29.

Deals with the results of borings in the Estevan area which show that there are several coal seams in underlying shales not exposed at the surface. 62-E-2.

**DOWLING, D. B. et al.**

- (1919): *Investigations in the gas and oil fields of Alberta, Saskatchewan, and Manitoba*, Geol. Survey Canada, Mem. 116, 89 pages, 1 relief map, 8 contour and depth maps, 1 plate, 4 figs. (well sections).

Part I deals with correlation of Cretaceous strata in the prairie provinces. Most of it is now out of date. Parts II and III treat the stratigraphy of parts of Alberta. The Appendix contains some logs of Sask. wells, few of which penetrate through the Cretaceous 62; 62-M-12,13, 72, 72-F-14, 72-I-2,5,6,7; 72-J-16, 72-N-13, 73; 73-B-7.

**DULIEUX, EMILE**

- (1910): *Le bassin houiller de l'Alberta et de la Saskatchewan (Canada)*, Société de l'industrie minière, Bull., 4e série, vol. 12, p. 133-161, 3 figs.

General description of the Cretaceous stratigraphy of the prairies. Main emphasis on the coal resources of Alberta. Only occasional reference to Sask. 62, 72.

**DYER, W. S.**

- (1927): *Oil and gas prospects in southern Saskatchewan*, Geol. Survey Canada, Summary Rept. 1926, pt. B, p. 30-38, 1 fig.

Brief description of the Cretaceous stratigraphy of southern Sask. To determine the structure the Whitemud formation was selected as a marker horizon, and elevations are given. Oil seepages are described 62, 72.

**EARDLEY-WILMOT, V. L.**

- (1927): *Abrasives. Part I: Siliceous abrasives*, Mines Branch, Dept. of Mines Canada, Rept. No. 673, 119 pages, 14 plates, 8 figs.

Mention is made of quartzite pebbles in the Cypress Hills. The beds of volcanic dust near Waldeck are described, and an account of their exploitation given. 72-F; 72-J-5.

**EASTWOOD, G. E. P.**

- (1951): *Snake Rapids, Saskatchewan*, Geol. Survey Canada, Map No. 1009A, with descriptive notes.

Final map, previously published in preliminary form, under same title (Paper 49-18). Area crosses boundary between Precambrian shield and Paleozoic rocks to the south. Emphasis is on the Precambrian rocks which are mapped in detail. Scale 1 inch equals  $\frac{1}{2}$  mile 63-L-10.

**EDMUNDS, F. H.**

- (1929): *Soil mapping as an aid to geological interpretation*, Can. Inst. Mining and Metal., Trans., vol. 32, p. 10-24, 4 figs.

The principal types of soil in Sask., such as residual soils and glacial soils, are discussed and examples cited. Sed. Sask.; 72-I-7, 72-K, 72-K-10, 72-O-12.

- (1937): *Some geological problems of central Saskatchewan*, Can. Inst. Mining and Metal., Trans., vol. 40, p. 45-58, 4 figs.

The correlation of Cretaceous strata is discussed and summarized in a table. Various structures in the plains are closely examined. The Simpson area is treated in detail and this paper is the main reference to that particular area. Sed. Sask., 72-P-6.

- (1938): *Gas possibilities of the Kamsack district*, Prov. of Sask., Dept. of Nat. Res., Annual Rept. 1938, part II, p. 13-15.

The surface geology and structure of the Kamsack district are discussed. Generalized well logs of three Kamsack wells given. 62-N-12.

- (1939a): *Placer gold along the North Saskatchewan river*, Prov. of Sask., Dept. of Nat. Res., Annual Rept. 1939, Part II, p. 15-17, 1 plate.

The history and geological occurrence of the placer gold deposits along the Alberta border in the valley of the North Saskatchewan river are discussed. A section through Frenchman's Butte is given. Recommendations for mining procedures etc. are presented. 73-F-12.

- (1939b): *Riverhurst area*, Prov. of Sask., Dept. of Nat. Res., Annual Rept. 1939, Part II, p. 19-22.

Comprehensive report on the natural gas occurrences near Riverhurst. Presented is the history, stratigraphy and structure of the area. The oil and gas possibilities are discussed and recommendations given for a shallow drilling program. 70-O-15.

- (1939c): *Spruce Lake area*, Prov. of Sask., Dept. of Nat. Res., Annual Rept. 1939, Part II, p. 22-25.

Surface geology of the area is discussed and the poor information from three wells is evaluated. No definite statement about the structure could be given because of lack of data. 73-F-11.

- (1940a): *Lemberg-Melville area*, Prov. of Sask., Dept. of Nat. Res., Annual Rept. 1940, Part II, p. 13-15.

Indications for a structural high in the area were found by study of well samples, but no additional proof was obtained in the field. 62-L.

- (1940b): *Some stages in the recession of the Pleistocene ice from Saskatchewan*, Abstract in: Royal Soc. Canada, Proc., 3d ser., vol. 34, Appendix D, sec. 4, p. 161.

Brief discussion of retreat of ice during which two lobes were formed one occupying the present valley of the South Saskatchewan River and the other the Last Mountain Lake valley. Sed. Sask.

- (1940c): *Oil and gas developments in the Lloydminster area*, Can. Inst. Mining and Metal., Trans., vol. 43, p. 261-273, 4 figs.

A major reference to the Lloydminster oil and gas field. Full discussion of stratigraphy and structure. Gas and oil reserves are estimated. 73-F-5.

- (1943a): *Gas in the Kamsack area*, Prov. of Sask., Dept. of Nat. Res., Annual Rept. 1942, p. 67-78.

Technical information on gas production in Kamsack area. Geology not discussed as no new geological information was obtained since previous report by EDMUNDS (1938). 62-N-12.

- (1943b): *Oil and gas possibilities in the Highland area, Saskatchewan*, Prov. of Sask., Dept. of Nat. Res., Annual Rept. 1942, p. 69-71.

Stratigraphy of area is briefly discussed using the information obtained from the Simpson wells. The structure is studied and the results seem to justify a deep drilling test in the area. 72-P-6.

- (1944a): *Oil and gas possibilities in Saskatchewan*, Prov. of Sask., Dept. of Nat. Res., Annual Rept. 1943, p. 49-56.

A summary of the stratigraphic sequence is presented, followed by a discussion of possible source beds, reservoir rocks and structures. Main emphasis is on the Cretaceous oil possibilities. Recommendations for drillers are given. Sed. Sask.

- (1944b): *Oil in shales*, Prov. of Sask., Dept. of Nat. Res., Annual Rept. 1943, p. 57-58.

The Alberta shales or their equivalents are considered as a possible future source of oil from shales. Sed. Sask.

- (1945a): *Drilling in Saskatchewan and the evidence of oil and gas*, Can. Inst. Mining and Metal., Trans., vol. 48, p. 221-236, 4 figs.

An outline of the stratigraphy of Sask. is presented with emphasis on the Cretaceous strata. Five areas, where gas was encountered, are discussed in detail. Sed. Sask.; 62-N-12; 63-D-10, 72-J-15, 73-C-6; 73-F-4,5.

- (1945b): *Salt in the Simpson No. 1 well*, Prov. of Sask., Dept. of Nat. Res., Annual Rept. 1945, p. 47-49.

Salt encountered in Paleozoic limestone, then tentatively regarded as Silurian, now placed in the Devonian. Chemical analysis of salt given. 62-P-6.

- (1945c): *The Kamsack gas*, Prov. of Sask., Dept. of Nat. Res., Annual Rept. 1945, p. 49-51.

Results of flow and pressure measurements of Kamsack gas wells. Recommendations for further development are given. 62-N-12.

- (1947): *Geology and its relationship to soils in Saskatchewan*, In: MITCHELL et al. (1944) and MITCHELL et al. (1950), 30 pages, 4 figs., 4 plates.

The geological history of Saskatchewan is discussed with presentation of a geologic map of the province, a section and a compiled stratigraphic column. Glacial geology is treated separately in its relationship to soil. Main general introduction to the geology of Southern Sask. Sed. Sask.

- (1948): *Lloydminster oil fields*, Western Miner, vol. 21, p. 127-130, 6 figs.

The history of the development of the Lloydminster field is dealt with and a brief summary of the stratigraphy is given. 73-F-4,5.

**EDMUNDS, F. H. et al.**

(1938): *Some skeletal remains in Saskatchewan*, American Antiquity, vol. 3, p. 244-246, 3 plates.

Description of skull, vertebrae, lower limbs and upper limbs of early man found near Bradwell. The specimens are figured. 70-O-16.

**EGGLESTON, WILFRID**

(1951): *The Cypress Hills*, Can. Geographical Jour., vol. 42, p. 52-67, 28 figs.

Briefly reviews the geological information about the Cypress Hills, in a general account on the geography of this area. 72-F.

**ELLS, R. W.**

(1877): *Report on the boring operations in the Northwest Territory*, summer of 1875, Geol. Survey Canada, Rept. of Progress 1875-1876, p. 281-291.

Describes shallow well drilled near Fort Charleton (3 miles west of present Charlton) which did not penetrate the drift. 73-B-15.

**ELLS, S.-C.**

(1923): *Cretaceous shales of Manitoba and Saskatchewan as a possible source of crude petroleum*, Mines Branch, Dept. of Mines Canada, Summary Rept. 1921, p. 34-41, 2 outcrop maps.

Main reference to the oil shales occurring in the Pasquia Hills. The stratigraphy is fully described, analyses of samples are provided. 63-B.

**FLINT, R. F.**

(1945): *Glacial map of North America*, Geol. Soc. Am. Special Paper, No. 60, pt. 1 (map), pt. 2 (Bibliography and explanatory notes, 37 pages).

Map on scale of 72 miles equals one inch. Important reference to the glacial geology of Sask., as this is the only map showing glacial features of the whole province. Several footnotes based on otherwise unpublished material. Sask.

**FORESTRY BRANCH**

(1950-1951): *Saskatchewan Forestry Series*, map sheets published by Sask. Dept. Nat. Res., Forestry Branch.

These sheets provide useful large scale base maps in areas otherwise unmapped. The following map sheets have been published, all on a scale of one mile to one inch. Index maps showing the latest publications are issued periodically by the above mentioned agency and supplied free of charge.

1. Farmingdale	1951	63-D-6
2. Reserve	1951	63-D-7
3. McBride Lake	1951	63-D-8
4. Pepaw River	1951	63-D-9
5. Prairie River	1951	63-D-15
6. Hudson Bay	1951	63-D-16
7. Leaf Lake	1951	63-E-1
8. Otosquen	1951	63-E-8
9. Mountain Cabin	1951	63-E-9
10. Montreal Lake North	1951	73-I-5
11. East Trout Lake	1951	73-I-6
12. Green Lake North	1951	73-J-5
13. Sled Lake	1951	73-J-6
14. Smoothstone Lake	1951	73-J-10
15. Dore Lake South	1951	73-J-11
16. Dore Lake North	1951	73-J-14
17. Swan Lake	1950	73-J-15
18. Two Forks River	1950	73-J-16

**FOURNIER, F. L.**

(1947): *Developments in Canada in 1946*, Am. Assoc. Petrol. Geol., Bull., vol. 31, p. 947-958, 2 figs.

Extension of the Lloydminster field in Sask. Gas from the Vera-Unity area.

**FRANKLIN, SIR JOHN**

(1823): See under RICHARDSON (1823)

**FRAREY, M. J.**

- (1950): *Ile-a-la-Crosse map area, Saskatchewan*, Geol. Survey Canada, Paper 50-25, 10 pages, geol. map.

Discussion of metamorphic and igneous rocktypes of Precambrian age. No deposits of economic interest are reported. Map on scale 1 inch to 2½ miles. 73-O.

**FRASER, F. J.**

- (1928): *Petrography of the sediments: mechanical analysis*, Geol. Survey Canada, Summary Rept. 1927, pt. B, p. 44-53.

This paper is an appendix to McLEARN (1928) and deals with samples collected in the Eastend area. The minerals occurring in the bromoform separates are described and tabulated. 72-F-7,10.

- (1929): *Additional notes on the petrography of the sediments*, Geol. Survey Canada, Summary Rept. 1928, pt. B, p. 45.

Briefly describes the mineral titanite omitted in a previous report, see FRASER (1928). 72-F,G.

- (1930): *Additional notes on the petrography of the sediments*, Geol. Survey Canada, Summary Rept. 1929, pt. B, p. 64.

Brief description of mineralogical habit of kyanite and staurolite encountered in sediments. 72-H-3,4,5,6.

- (1934a): *Kaolin in the Whitemud beds of southern Saskatchewan*, Royal Soc. Canada, Trans., 3d ser., vol. 28, sec. 4, p. 13-16, 1 fig.

Mineralogical description of the mineral kaolin as found in the Upper Cretaceous Whitemud of southern Sask. No reference to its geological occurrence is made. 72.

- (1934b): *Petrography of the Whitemud and Willowbunch clay samples*, Geol. Survey Canada, Summary Rept. 1933, pt. B, p. 156-157.

Short description of clay samples giving the mineral composition as determinable with the petrographic microscope. No investigation of the clay minerals. 62, 72.

**FRASER, F. J. et al.**

- (1935): *Geology of southern Saskatchewan*, Geol. Survey Canada, Mem. 176, 137 pages, 5 plates, 4 figs., geol. map and sections, (G.S.C. map No. 267A and publication No. 2341).

Describes geology of the Regina map sheet. Main reference to this area. Emphasis on stratigraphy and coal resources. Separate chapters on petrography of sediments and on the origin of the Whitemud sediments. Contains faunal lists of Bearpaw and Upper Ravenscrag formations; floral lists of Whitemud and Ravenscrag. Map on scale 1 inch to 8 miles. Section same horizontal scale and vertical scale 1 inch to 2,000 feet. 62-E,L,M; 72-F (West half), C,H; 72-K (West half), J,I; 72-N (West half), O,P.

**FRENCH, C. A.**

- (1921): *Magnetic results, 1907-1920*, Dept. Interior, Publications of the Dominion Observatory, Ottawa, vol. V, No. 5, 262 pages, 3 declination charts.

Contains data on Sask. stations. See also FRENCH and MADILL (1927).

**FRENCH, C. A. and MADILL, R. G.**

- (1927): *Magnetic results, 1921-1923*, Dept. Interior, Publications of the Dominion Observatory, Ottawa, vol. VIII, No. 8, 240 pages, 17 figs.

Reoccupation of many stations in Sask. previously reported on (FRENCH, 1921).

**FURNIVAL, G. M.**

- (1940): *Stony Rapids and Porcupine River areas, Saskatchewan*, Geol. Survey Canada, Paper 40-10, 10 pages, 2 geol. maps.

Emphasis of the paper is on the description of the rock types mapped. Structural features are treated briefly. Little prospecting has been done, but some mineral occurrences are discussed. This preliminary paper is now superseded by 2 final maps (FURNIVAL, 1941a, and FURNIVAL, 1941b). Map on scale 1 inch to 2 miles. 74-P.

- (1941a): *Porcupine River, northern Saskatchewan*, Geol. Survey Canada Map No. 658A, with descriptive notes.

Final map, which was previously presented in preliminary form (FURNIVAL, 1940). Scale 1 inch to 4 miles. 74-P (East half).

- (1941b): *Stony Rapids, northern Saskatchewan*, Geol. Survey Canada, Map. No. 659A, with descriptive notes.

Final map which was previously presented in preliminary form. (FURNIVAL, 1940). Scale 1 inch to 4 miles 74-P (West half).

- (1941c): *The Belanger and Oxarart members of the Bearpaw formation, Cypress Hills area, Saskatchewan*, Royal Soc. Canada, Trans., 3d ser., vol. 35, sec. 4, p. 57-69, 1 fig.

Stratigraphical description of the members is followed by a table showing the distribution of fossils at various localities. Correlation is fully discussed. 72-F-3,4,5,6.

- (1942): *Cypress Lake, Saskatchewan*, Geol. Survey Canada, Paper 42-5, preliminary geol. map with descriptive notes.

Short notes on the Cretaceous stratigraphy of the area mapped. Results of this preliminary report are embodied in FURNIVAL (1946). Scale 1 inch to 2 miles. 72-F-3,4,5,6,11,12,13,14.

- (1946): *Cypress Lake map-area, Saskatchewan*, Geol. Survey Canada, Mem. 242 161 pages, 4 plates, 5 figs., geol. map, structure contour map, (G.S.C. Map No. 784A, 856A).

Constitutes together with RUSSELL (1947) the main modern reference to the Cypress Hills area. Discussion of the stratigraphy comprises the greater part of the report with faunal lists and many measured sections given. Extensive bibliography. Maps on scale 1 inch to 4 miles. 72-F (West half), 72-F-4,11,12,13.

## GALLOWAY, J. O.

- (1951): *Developments in western Canada in 1950*, Am. Assoc. Petrol. Geol. Bull., vol. 35, p. 1388-1403, 4 figs.

Exploration activities in Sask. summarized.

## GEOL. ASSOC. CANADA.

- (1950): *Tectonic map of Canada*, prepared by the Geol. Assoc. Canada with the support of the Geol. Soc. Am.

Map on scale 60 miles equals one inch. In the Precambrian region of Sask. many major high-angle faults are shown. Trend lines are drawn where structure incompletely known. In the Post-Precambrian part of the province structure contour lines indicate the Precambrian basement as well as the top of the Lower Cretaceous. Sask.

## GEOL. SURVEY CANADA

- (1922): *Mackenzie River basin, northwestern Canada*, Geol. Survey Canada, Map No. 1585.

No accompanying publication. Map without descriptive notes. One of the early maps compiling geologic knowledge of Precambrian Sask. Scale 1 inch to 50 miles. Prec. Sask.

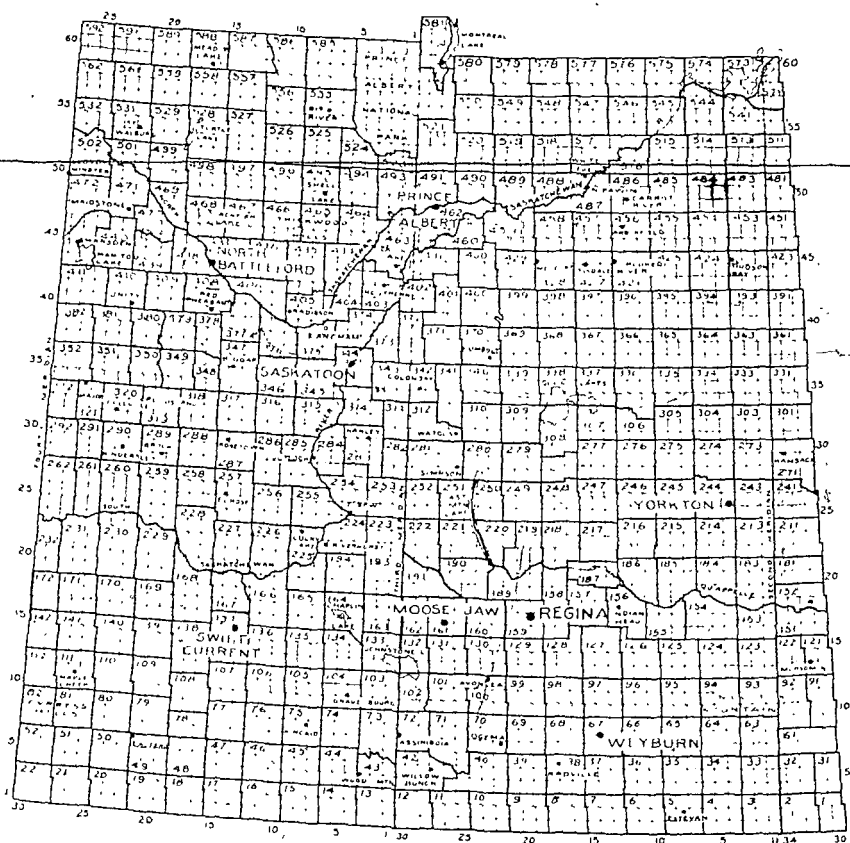
- (1936 & 1947): *Ground-water resources of the Rural Municipality of \_\_\_\_\_ No. \_\_\_\_\_, Saskatchewan*, Geol. Survey Canada, Water Supply paper, No. \_\_\_\_\_. Below is a list giving the number and name of the Rural Municipalities (R.M.) and the number of the Water Supply paper (W.S.P.) covering the municipality.

These reports are the result of investigations carried out in 1936 under the direction of B. R. MACKAY and in 1947 more information was compiled by C. O. HAGE. An index map showing the geographic location of the rural municipalities is included in this report (Map No. 3).

R.M.	Name	W.S.P.	R.M.	Name	W.S.P.
1	Argyle	5	20		32
2	Mount Pleasant	7	21		109
3	Binniskillen	1	22		110
4	Coalfields	3	31	Stortboaks	13
5	Estevan	6	32	Reciprocity	12
6	Cambria	8	33	Moose Creek	20
7	Souris Valley	11	34	Browning	28
8	Lake Alma	41	35	Benson	44
9	Surprise Valley	50	36	Cymr	34
10	Happy Valley	19	37	Lomond	55
11	Hart Butte	17	38	Laurier	49
12	Poplar Valley	27	39	The Gap	60
13		59	40	Bengough	43
14		82	42	Willow Bunch	29
15		73	43		61
16		74	44	Waverley	75
17		84	45	Mankota	87
18	Lone Tree	25	46	Glen McPherson	94
19	Frontier	69	47		86

R.M.	Name	W.S.P.	R.M.	Name	W.S.P.
48		38	184	Grayson	150
49	White Valley	54	185	McLeod	151
50		111	186	Abernethy	152
51	Reno	112	187	North Qu'Appelle	153
52		113	189	Lumsden	154
61	Antler	24	190	Dufferin	155
63	Moose Mountain	15	191	Marquis	156
64	Brock	30	193	Eyeblow	22
65	Tecumseh	14	194	Enfield	57
66	Griffin	21	195	Vermilion Hills	106
67	Weyburn	33	211	Churchbridge	157
68	Brokenshell	53	213	Saltcoats	158
69	Norton	65	214	Canan	159
70	Key West	37	215	Stanley	160
71	Excel.	26	216	Tullymet	161
72	Lake of the Rivers	52	217	Lipton	162
73	Stonehenge	221	218	Cupar	163
74	Wood River	222	219	Longlaketon	164
75	Pinto Creek	105	220	McKillop	165
76	Auvergne	223	221	Sarna	166
77	Wise Creek	89	222	Craig	167
78	Grassy Creek	39	223	Huron	68
79	Arlington	45	224	Maple Bush	92
80		224	225	Canan	168
81		225	226	Victory	169
82		108	227		170
91	Maryfield	18	228	Lacadena	171
92	Walpole	23	229	Miry Creek	172
93	Wawken	36	230	Clinworth	173
94	Hazelwood	46	231	Happyland	174
95	Golden West	64	232	Deer Forks	175
96	Fillmore	51	241	Calder	176
97	Wellington	40	243	Wallace	177
98	Scott	4	244	Orkney	178
99	Caldonia	2	245	Garry	179
100	Elmsthorpe	10	246	Ituna Bon Accord	180
101	Terrell	9	247	Kellross	181
102	Lake Johnston	16	248	Touchwood	99
103	Sutton	114	249	Millington	101
104	Gravelbourg	115	250	Last Mtn. Valley	90
105	Glen Bain	116	251	Big Arm	81
106	Whiska Creek	117	252	Arm River	79
107	Lac Pelletier	118	253	Willner	182
108	Bone Creek	88	254	Loreburn	183
109	Carmichael	63	255	Coteau	184
110	Piapot	119	256	King George	185
111	Maple Creek	120	257	Monet	186
112		121	258	Fairview	187
121	Moosomin	80	259	Snipe Lake	188
122	Martin	78	260	Newcombe	189
123	Silverwood	66	261	Royal Canadian	190
124	Kingsley	58	262	Mantario	191
125	Ghester	71	271	Cote	192
126	Montmartre	76	273	Shding Hills	193
127	Francis	83	274	Good Lake	194
128	Lajord	122	275	Insinger	195
129	Bratt's Lake	123	276	Beaver	196
130	Redburn	124	277	Emerald	197
131	Baldon	125	278	Kutawa	77
132	Hillsborough	47	279	Mount Hope	72
133	Rodgers	126	280	Wreford	56
134	Shamrock	127	281	Wood Creek	48
135	Lawtonia	128	282	McCraney	31
136	Coulee	129	283	Rosedale	198
137	Swift Current	130	284	Rudy	199
138	Webb	98	285	Fertile Valley	200
139	Gull Lake	96	286	Milden	201
140		131	287	St. Andrews	202
141	Big Stuck	132	288	Pleasant Valley	100
142	Bitter Lake	133	289	Hillsburgh	203
151	Rocanville	85	290	Kindersley	204
152	Spy Hill	102	291	Elma	205
153	Willowdale	91	292	Milton	206
154	Elcapo	97	301	St. Philips	207
155	Wolseley	95	303	Keyes	208
156	Indian Head	93	304	Buchanan	209
157	South Qu'Appelle	104	305	Invermay	210
158	Edenwold	134	306	Foam Lake	211
159	Sherwood	135	307	Elfros	212
160	Pense	136	308	Big Quill	70
161	Moose Jaw	137	309	Prairie Rose	67
162	Caron	138	310	Usborne	62
164	Chaplin	140	312	Morris	42
165	Morse	141	313	Lost River	35
166	Excelsior	142	314	Dundurn	213
167	Saskatchewan Ldg.	143	315	Montrose	214
168	Riverside	144	316	Harris	215
169	Pittville	145	317	Marriott	216
170		146	318	Mountain View	103
171	Fox Valley	147	319	Winlow	217
172	Enterprise	148	320	Oakdale	218
181	Langenburg	107	321	Prairiedale	219
183	Fertile Belt	149	322	Antelope Park	220

R. M.	Name	W.S.P.	R. M.	Name	W.S.P.
341	Viscount	226	467	Round Hill	248
347	Biggar	227	468	Meota	249
348	Bushville	228	469	Turtle River	250
349	Grandview	229	470	Paynton	251
350	Mariposa	230	471	Eldon	252
351	Progress	231	472	Wilton	253
352	Heart's Hall	232	497	Medstead	254
377	Glen'side	233	498	Parkdale	255
378	Rosemount	231	499	Mervin	256
379	Reford	235	501	Paradise	257
380	Tramping Lake	236	502	Britannia	258
381	Grass Lake	237	528	Local Improvement District No. 528	259
382	Eye Hill	238	529	Greenfield	260
408	Prairie	239	531	North Star	261
409	Buffalo	240	532	Local Improvement District No. 532	262
410	Round Valley	241	559	Local Improvement District No. 559	263
411	Senlac	242	561	Local Improvement District No. 561	264
437	North Battleford	243			
438	Battle River	244			
439	Cut Knife	245			
440	Hillsdale	246			
442	Manitou Lake	247			



MAP No. 3

INDEX MAP  
OF

RURAL MUNICIPALITIES OF SASKATCHEWAN

SCALE

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100 101 102 103 104 105 106 107 108 109 110 111 112 113 114 115 116 117 118 119 120 121 122 123 124 125 126 127 128 129 130 131 132 133 134 135 136 137 138 139 140 141 142 143 144 145 146 147 148 149 150 151 152 153 154 155 156 157 158 159 160 161 162 163 164 165 166 167 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 186 187 188 189 190 191 192 193 194 195 196 197 198 199 200 201 202 203 204 205 206 207 208 209 210 211 212 213 214 215 216 217 218 219 220 221 222 223 224 225 226 227 228 229 230 231 232 233 234 235 236 237 238 239 240 241 242 243 244 245 246 247 248 249 250 251 252 253 254 255 256 257 258 259 260 261 262 263 264 265 266 267 268 269 270 271 272 273 274 275 276 277 278 279 280 281 282 283 284 285 286 287 288 289 290 291 292 293 294 295 296 297 298 299 300 301 302 303 304 305 306 307 308 309 310 311 312 313 314 315 316 317 318 319 320 321 322 323 324 325 326 327 328 329 330 331 332 333 334 335 336 337 338 339 340 341 342 343 344 345 346 347 348 349 350 351 352 353 354 355 356 357 358 359 360 361 362 363 364 365 366 367 368 369 370 371 372 373 374 375 376 377 378 379 380 381 382 383 384 385 386 387 388 389 390 391 392 393 394 395 396 397 398 399 400 401 402 403 404 405 406 407 408 409 410 411 412 413 414 415 416 417 418 419 420 421 422 423 424 425 426 427 428 429 430 431 432 433 434 435 436 437 438 439 440 441 442 443 444 445 446 447 448 449 450 451 452 453 454 455 456 457 458 459 460 461 462 463 464 465 466 467 468 469 470 471 472 473 474 475 476 477 478 479 480 481 482 483 484 485 486 487 488 489 490 491 492 493 494 495 496 497 498 499 500 501 502 503 504 505 506 507 508 509 510 511 512 513 514 515 516 517 518 519 520 521 522 523 524 525 526 527 528 529 530 531 532 533 534 535 536 537 538 539 540 541 542 543 544 545 546 547 548 549 550 551 552 553 554 555 556 557 558 559 560 561 562 563 564 565 566 567 568 569 570 571 572 573 574 575 576 577 578 579 580 581 582 583 584 585 586 587 588 589 590 591 592 593 594 595 596 597 598 599 600 601 602 603 604 605 606 607 608 609 610 611 612 613 614 615 616 617 618 619 620 621 622 623 624 625 626 627 628 629 630 631 632 633 634 635 636 637 638 639 640 641 642 643 644 645 646 647 648 649 650 651 652 653 654 655 656 657 658 659 660 661 662 663 664 665 666 667 668 669 670 671 672 673 674 675 676 677 678 679 680 681 682 683 684 685 686 687 688 689 690 691 692 693 694 695 696 697 698 699 700 701 702 703 704 705 706 707 708 709 710 711 712 713 714 715 716 717 718 719 720 721 722 723 724 725 726 727 728 729 730 731 732 733 734 735 736 737 738 739 740 741 742 743 744 745 746 747 748 749 750 751 752 753 754 755 756 757 758 759 760 761 762 763 764 765 766 767 768 769 770 771 772 773 774 775 776 777 778 779 780 781 782 783 784 785 786 787 788 789 790 791 792 793 794 795 796 797 798 799 800 801 802 803 804 805 806 807 808 809 810 811 812 813 814 815 816 817 818 819 820 821 822 823 824 825 826 827 828 829 830 831 832 833 834 835 836 837 838 839 840 841 842 843 844 845 846 847 848 849 850 851 852 853 854 855 856 857 858 859 860 861 862 863 864 865 866 867 868 869 870 871 872 873 874 875 876 877 878 879 880 881 882 883 884 885 886 887 888 889 890 891 892 893 894 895 896 897 898 899 900 901 902 903 904 905 906 907 908 909 910 911 912 913 914 915 916 917 918 919 920 921 922 923 924 925 926 927 928 929 930 931 932 933 934 935 936 937 938 939 940 941 942 943 944 945 946 947 948 949 950 951 952 953 954 955 956 957 958 959 960 961 962 963 964 965 966 967 968 969 970 971 972 973 974 975 976 977 978 979 980 981 982 983 984 985 986 987 988 989 990 991 992 993 994 995 996 997 998 999 1000



- (1939a): *Fort Pitt (East half)*, Geol. Survey Canada, Map No. 489A.  
No accompanying publication. Map without any descriptive notes. Scale 1 inch to 4 miles 73-F (East half).
- (1939b): *Fort Pitt sheet (West half)*, Geol. Survey Canada Map. No. 490A.  
No accompanying publication. Map without any descriptive notes. Scale 1 inch to 4 miles. 73-F (West-half).
- (1945): *Geological map of the Dominion of Canada*, Geol. Survey Canada, Map No. 820A.  
Scale 1 inch to 60 miles. Map is more interpretative than the geological map of the province. Sask.
- (1947a): *Geological map of Saskatchewan*, Geol. Survey Canada, Map No. 895A.  
No accompanying publication. Scale 1 inch to 20 miles. Sask.
- (1947b): *Mineral map of Saskatchewan*, Geol. Survey Canada, Map No. 896A.  
No accompanying publication. An index to mining properties is provided. This map shows much information obtained from unpublished sources. Scale 1 inch to 20 miles. Sask.
- (1947c): *Geology and economic minerals of Canada*, Geol. Survey Canada, Econ. Geol. Ser. No. 1, 3d edition, 357 pages, 66 plates, 77 figs.  
Most up to date main reference to the general geology of both Precambrian and post-Precambrian Sask. Compiles previous knowledge of stratigraphy, structure and economic geology. Prec: Sask., Sed. Sask.; 63-K-13, 74-A-7, 74-N-8 9, 74-O-12.
- (1947d): *Canadian mining areas*, Geol. Survey Canada, Map No. 900A. Scale 1 inch to 125 miles. Sask.

#### GILL, J. E.

- (1949): *Natural divisions of the Canadian shield*, Royal Soc. Canada, Trans., 3d ser., vol. 43, sec. 4, p. 61-69, 3 figs.

General discussion concerning the bedrock geology and topography of the Canadian shield. The shield in Sask. belongs to the Churchill province which is subdivided into the Athabaska Mountains, the Athabaska Plain and the Tazin Mountains. Prec. Sask.

#### GOUDGE, M. F.

- (1930): *Preliminary report on the limestones of northern and western Ontario and of the prairie provinces*, Mines Branch, Dept. of Mines Canada, Investigations of Mineral Resources and the Mining Industry, 1928, Rept. No. 710, p. 1-18.

Briefly mentions the occurrence of limestone and dolomite boulders and their usage for lime production and as building stone. 72-P-13; 73-B-2; 73-H-8.

- (1933): *Canadian limestones for building purposes*, Mines Branch, Dept. of Mines Canada, Rept. No. 733, 196 pages, 40 plates, 10 figs.

The Paleozoic limestones in east-central Sask. are briefly mentioned, as are the boulders used as building stone in southern Sask. (Univ. of Sask.) Sed. Sask.

- (1945): *Limestones of Canada, their occurrence and characteristics, Pt. V, Western Canada*, Mines Branch, Dept. of Mines Canada, Rept. No. 811, 233 pages, 40 plates, 6 figs., 2 geol. maps.

Description of limestone and dolomite rock suitable for making lime cement or usable as building stone. No outcrops were found in Sask. close enough to a market to be of economic significance. The deposits described are all of boulders in the drift. Sed. Sask.; 62-E-L; 72-I-5; 72-P-11,13; 73-A-12; 73-B-2.

#### GRAY, J. G. and FOURNIER, F. L.

- (1948): *Developments in Canada in 1947*, Am. Assoc. Petrol. Geol. vol. 32, p. 1079-1092, 1 fig.

Increase in drilling program in Lloydminster field. Outside this field two wildcats drilled. Sed. Sask.

#### GRAY, J. G. and ROLIFF, W. A.

- (1949): *Developments in Canada in 1948*, Am. Assoc. Petrol. Geol., Bull., vol. 33, p. 1012-1028, 6 figs.

Activities confined mainly to Lloydminster. Few wildcats drilled.

(1950): *Developments in Canada in 1949*, Am. Assoc. Petrol. Geol., Bull., vol. 34, p. 1235-1259, 6 figs.

Exploration developments of western Canada discussed.

#### HAGE, C. O.

(1947): For reports on the ground-water supplies of the Rural Municipalities of Sask. see GEOLOGICAL SURVEY CANADA (1936 and 1947).

#### HAMELIN, D. F.

(1931): *White clays in southern Saskatchewan*, Econ. Geology, vol. 26, p. 225-227.

In a discussion about the origin of white clays the writer calls attention to the Whitemud beds quoting previously published data. 72-F.

#### HARRISON, J. M.

(1949): *Kisissing, Saskatchewan and Manitoba*, Geol. Survey Canada, Map No. 970A. No accompanying publication. Map provided with descriptive marginal notes. Scale 1 inch to 4 miles. 63-N-4.

—(1951a): *Possible major structural control of ore deposits Flin Flon-Snow Lake mineral belt, Manitoba*, Can. Inst. Mining and Metal., Trans., vol. 54, p. 4-8, 3 figs.

The structures discussed occur mainly in Manitoba but extend into Sask., north of Amisk Lake and near Flin Flon. 63-K-12.13, 63-L-9.16

—(1951b): *Precambrian correlation and nomenclature, and problems of the Kisseynew gneisses in Manitoba*, Geol. Survey Canada, C.S.C. Bull. 20, 53 pages, 1 plate, 4 figs.

Report deals mainly with Manitoba. The Flin Flon region with adjacent parts of Sask. is reviewed as to history of mapping and stratigraphic studies. Correlations of this region with other parts of the Precambrian shield are given. Brief mention is made of the central and northwestern shield area in Sask. Prec. Sask.; 63-K-12; 63-L-9.

#### HASTINGS, W. H.

(1929): *Coal reserves of Saskatchewan*, Can. Inst. Mining and Metal., Trans., vol. 32, p. 389-394, 1 fig.

The various coal bearing areas of Sask. are reviewed separately as to their reserves. Sed. Sask.

#### HECTOR, JAMES

(1859): *Report on the geology of the country*, Enclosure 3 in No. 6, p. 19-23 and enclosure 1 in No. 9, p. 42-45 in: *Papers relative to the exploration by Captain Palliser of that portion of British North America which lies between the northern branch of the river Saskatchewan and the frontier of the United States and between the Red River and the Rocky Mountains*, London, printed by G. E. Eyre and W. Spottiswoode, 64 pages, ill., maps.

The larger physiographic features of the prairies are mentioned. The Cretaceous strata were studied near Elbow. A side trip to the Souris Valley was made and a section including coal strata is given. The distribution of drift over the area is dealt with. For more detailed account see HECTOR (1863) 62; 62-E-2; 72; 72-O-2; 73.

—(1861a): *On the Pleistocene deposits of North America*, Geologist, London, vol. 4, p. 461-462.

Brief account of a paper presented before the British Association meeting of Manchester. It describes in general the physiography of the plains, mentioning the three prairie steppes. Sed. Sask.

—(1861b): *On the Geology of the country between Lake Superior and the Pacific Ocean (between the 48th and 54th parallels of latitude), visited by the Government Exploring Expedition under the command of Captain J. Palliser (1857-1860)*, Geol. Soc. London, Quart. Jour., vol. 17, p. 388-345, 13 figs., geol. map.

Embodies the more important results of the geological investigations of the Palliser Expedition. Description of general physical features and surface deposits. For full report see HECTOR (1863). Sed. Sask.

- (1863): *Geological Report*, Rept. No. 10, p. 216-245 in: *The Journals, detailed reports, and observations relative to the exploration by Captain Palliser of that portion of British North America which in latitude lies between the British boundary line and the height of land or watershed of the Northern or Frozen Ocean respectively and in longitude, between the western shore of Lake Superior and the Pacific Ocean, during the years 1857, 1858, 1859 and 1860*, London, printed by G. E. Eyre and W. Spottiswoode, 325 pages, ill., maps.

The stratigraphy of the prairies is discussed, a section given, and faunal lists added. More detailed report than HECTOR (1859) but covering same area. 62; 62-E-2; 72: 72-O-2; 73.

## HENDERSON, J. F.

- (1948): *Extent of Proterozoic granitic intrusions in the western part of the Canadian shield*, Royal Soc. Canada, Trans., 3d ser., vol. 42, sec. 4, p. 41-54, 1 fig.

Paper deals mainly with N.W.T. but suggests that the Proterozoic granite occurring there may extend into Sask. A correlation table including the Lake Athabasca section is presented. Prec. Sask.

## HIND, H. Y.

- (1859): *Northwest Territory. Reports of progress together with a preliminary and general report on the Assiniboine and Saskatchewan exploring expedition*, Toronto, 201 pages, ill., maps (Several other editions under slightly different title).

Contains the scientific data gathered during the expedition in addition to the itinerary which occupies the first 15 chapters and which is virtually the same account as given in HIND (1860). The section on geology consists of 5 chapters (see also MEEK 1859) with many illustrations and the oldest geological map showing nearly the whole of Post-Precambrian Sask. Sed. Sask.

- (1860): *Narrative of the Canadian Red River exploring expedition of 1857 and of the Assiniboine and Saskatchewan exploring expedition of 1858*, Longman, Green, Longman and Roberts, London, 2 vols., 494 and 472 pages, ill., map.

The account given of the second expedition is virtually the same as that in HIND (1859) but the geological section does not show the same amount of figures and maps. Describes mainly the physiography of the southern part of Sask. Descriptions of Qu'Appelle Valley and South Sask. River Surface deposits were noted and the Cretaceous strata are discussed. For more detailed geological data collected by this expedition see HIND (1859) and MEEK (1859). Sed. Sask.

## HOFFMANN, G. C.

- (1877): *Chemical contributions to the geology of Canada*, Geol. Survey Canada, Rept. of Progress 1875-1876, p. 419-432.

Petrographic description and iron content given of one sample of clay-iron stone collected from near Fort Pelly 62-M-13.

- (1881): *Chemical contributions to the geology of Canada, from the laboratory of the Survey*, Geol. Survey Canada, Rept. of Progress 1879-1880, pt. H, 21 pages.

Gives analyses of lignite ash and lignite coal collected from near Estevan. 62-E-2.

- (1885): *Analyses of coals and lignites of the Northwest Territory*, Geol. Survey Canada, Rept. of Progress 1882-1883-1884, pt. M, 44 pages.

Only one analysis given of sample collected from Souris River. 62-E-2.

- (1886): *Chemical contributions to the geology of Canada, from the laboratory of the survey*, Geol. Survey Canada, Annual Rept. (New ser.), vol. 1, pt. M, 29 pages.

Contains analyses of coal samples collected in the Cypress Hills and on Wood Mountain. 72-F-G.

## HOGG, C. A. L.

- (1950): *Viking sand gas possible in central-southern Saskatchewan?*, Oil in Canada, vol. 2, No. 26, May 1, p. 1878-1879, 2 figs.

The paper discusses the subsurface distribution of the Viking gas sand and its equivalents. The gas possibilities of other horizons (Belly River formation and Second White Specks) are also mentioned. Recommendations for coring and testing are given. 72-H-7,10,11,14; 72-1-2; 72-O-8; 73-J-4,10,15, 73-C-6.

## HOLLAND, A. A.

- (1949): *The Chaplin sodium sulphate plant, Saskatchewan*, Can. Inst. Mining and Metal., Trans., vol. 52, p. 121-124, 5 figs.

Paper deals mainly with the technology of extracting and processing the sodium sulphate. A brief description of the nature of the Chaplin deposit precedes the technical part. 72-J-7.

## HOULDSWORTH, EDGAR

- (1941): *The Big Muddy Valley of Southern Saskatchewan*, Can. Geog. Jour., vol. 23, p. 116-131, 24 figs., index map.

The physiographic history of the region is dealt with as well as the rocks of the valley and their fossil content. Many photographs of plant specimens are included and a new discovery of *Trapa* (*?*) *microphylla* is discussed. See also BROWN and HOULDSWORTH (1939). 72-H.

## HOWELLS, W. C.

- (1941): *The geology of the Windrum Lake area, Saskatchewan*, Abstract in: Royal Soc. Canada, Proc., 3d ser., vol. 35, Appendix C, sec. 4, p. 193.

Brief discussion of rock-types, structures, metamorphism, metasomatism. 74-F-16.

## HRISKEVICH, M. E.

- (1949): *Radioactive occurrences in the Black Lake area, Athabaska mining division, Saskatchewan*, Prov. of Sask., Dept. of Nat. Res., Precambrian Geology Series, Rept. 2, 31 pages, 11 figs.

Main reference to the radioactive occurrences in the Black Lake area. Discussion of general geology is followed by a detailed description of the commercial mineralizations. 74-P-2,3,6,7.

## HUME, G. S.

- (1926): *Oil prospects in the vicinity of Battle River at the Alberta-Saskatchewan boundary*, Geol. Survey Canada, Summary Rept. 1925, pt. B, p. 1-13, geol. map.

Deals mainly with Alberta but investigations of the Cretaceous stratigraphy and structure of strata exposed along Battle River south of Lloydminster-Lone Rock are included. 73-C-13.

- (1930): *Natural gas in Saskatchewan*, Can. Mining Jour., vol. 51, p. 991-994, 1 fig.

Abstract of an official report made to the Premier of the Province of Saskatchewan. This report bears the title *The natural gas prospects of the Province of Saskatchewan*. Mimeographed copies of it can be obtained from the Geol. Survey Canada. In the paper the geological information available is reviewed. The record of the 33 wells drilled in the province up to 1930 is incorporated in the original report but only a review of the results is given in the article. The Dirt Hills and Ribstone areas are recommended for further work. Sed. Sask.; 72-H-14.

- (1933): *Oil and gas in western Canada*, (Second ed.) Geol. Survey Canada, Econ. Geol. Ser. No. 5, 357 pages, 26 figs.

Main reference compiling all previous data. The second edition printed in 1933 replaces the first edition printed in 1928. First three chapters deal with origin of oil, geophysical prospecting, and general geology of the plains including a summary of the stratigraphy Sask. is dealt with in one chapter which gives the general stratigraphy, structure and several well logs. Sed. Sask., 72-F-4; 72-1-5,8; 72-J-6,15; 72-N-9,13; 72-O-6,9,15; 72-P-6; 73-C-6; 73-F-5.

- (1939a): *Battleford sheet (East half)*, Geol. Survey Canada, Map No. 491A.

No accompanying publication. Map without any descriptive notes. Scale 1 inch to 4 miles. 73-C (East half).

- (1939b): *Battleford sheet (West half)*, Geol. Survey Canada, Map No. 492A.

No accompanying publication. Map without any descriptive notes. Scale 1 inch to 4 miles. 73-C (West half).

- (1945): *Developments in Canada in 1944*, Am. Assoc. Petrol. Geol., Bull., vol. 29, p. 654-664, 2 figs.

Wildcat program in southern Sask. briefly mentioned as well as drilling in Lloydminster field.

- (1946): *Development in Canada in 1945*, Am. Assoc. Petrol. Geol., Bull., vol. 30, p. 851-860, 2 figs.

Discovery of gas at Unity and production from the first commercial oil well in Sask. mentioned.

**HUME, G. S. and HAGE, C. O.**

- (1936): *Eagle Hills anticline, Battleford area, Saskatchewan*, Geol. Survey Canada, Paper 35-3, 13 pages, geol. map and cross-sections.

Short description of stratigraphy of area. Main emphasis on structural geology in connection with prospective oil and gas horizons. Scale of map 1 inch to 3 miles. 73-C-9,10,15,16; 73-F-1,2.

- (1940): *The Lloydminster gas and oil area, Alberta and Saskatchewan*, Geol. Survey Canada, Paper 40-11, 12 pages, 1 fig.

A structural interpretation of the area, using Upper Cretaceous horizons, is given and a structure contour map presented. The gas and oil production, analyses of gas and crude, and geological tops in several wells are added. 73-F-4,5.

- (1941): *The geology of east-central Alberta*, Geol. Survey Canada, Mem. 232, 101 pages, 2 geol. maps. 12 figs.

The structural geology of the Lloydminster field is discussed and a structure contour map on top of Lower Cretaceous is presented. The Ribstone-Blackfoot anticline is also contoured across the border into Sask. 73-C-13; 73-F-4,5.

**HUME, G. S. and IGNATIEFF, A.**

- (1950): *Natural gas reserves of the Prairie Provinces*, Geol. Survey Canada, Special Report, 399 pages, 59 maps.

Sask areas studied are Lloydminster, Lone Rock, Unity and Kamsack. Most up to date evaluation of the gas reserves in these fields. The geology is briefly discussed. 62-M-12, 73-C-6; 73-F-4,5.

**HUTT, G. M.**

- (1930): *Geology of the fire clays of southern Saskatchewan*, Am. Ceramic Soc., Jour., vol. 13, p. 174-181, 1 fig. Also in: *Can. Mining Jour.*, vol. 51, p. 493-494, 1 fig., continued on p. 525-526.

The stratigraphy of the Whitemud formation as well as its structure and origin are considered. The economic features are mentioned. Article gives a comprehensive picture of the Whitemud formation. 72-F,G,H.

- (1932): *Clays and clay products industry in Western Canada, Precambrian*, vol. 5, No. 2, p. 18-23, 2 figs.

General article on the properties of clays and their industrial use. Includes one chapter on the clay resources of Sask. giving a brief summary of their geographical distribution and their quality. 62, 72.

**INGALL, E. D.**

- (1927): *Deep borings in the Prairie Provinces and Northwest Territories*, Geol. Survey Canada, Summary Rept. 1926, pt. B, p. 43-52.

Mentions some Sask. wells in the Lloydminster area, near Riverhurst, and near Eastend. No stratigraphical tops given. The information given for these wells can also be found in ANONYMOUS (1951).

**JAMES, W. F. et al.**

- (1950): *Canadian deposits of uranium and thorium*, Am. Inst. Mining Eng., Trans., vol. 187, p. 239-255, 2 figs.

General discussion of the history of uranium discoveries in Canada and types of deposits is followed by description of individual areas. In Sask. the Goldfields area is treated as to general geology, structure and evaluation of properties. 74-N-7,8,9,10.

**JEWITT, W. G. and GRAY, STANLEY**

- (1940): *The Box Mine, of the Consolidated Mining and Smelting Company of Canada, limited*, Can. Inst. Mining and Metal., Trans., vol. 43, p. 447-467, 11 figs.

Paper deals mainly with mining procedures, but the general geology is discussed briefly in the introduction. 74-N-7.

**JOHNSTON, C. S.**

- (1951): *Some notes on the Lake Athabaska district, Saskatchewan, Precambrian* vol. 24, p. 12-13.

Brief general description of the radioactive mineral occurrences in the Beaverlodge and Black Lake regions. 74-N,O,P.

**JOHNSTON, R. A. A.**

- (1915): *A list of Canadian mineral occurrences*, Geol. Survey Canada, Mem. 74, 275 pages.

Lists but does not describe some non-metallic and few metallic occurrences. 62-E-2,3, 72-G-7,8, 73-J-4, 74-N-5,10, 74-P-3.

**JOHNSTON, R. A. A. and ELLSWORTH, H. V.**

- (1921): *The Annahme meteorite*, Royal Soc. Canada, Trans., 3d ser., vol. 15, sec. 4, p. 69-92, 3 figs., 14 plates.

Description of finding, reports by eye witnesses, full chemical and mineralogical analysis 73-A-7.

**JOHNSTON, W. A.**

- (1916): *The genesis of Lake Agassiz: a confirmation*, Jour. Geol., vol. 24, p. 625-638, 1 fig.

Presented is an interpretation of the life-history of Lake Agassiz which differs from that given by UPHAM (1895) Sask.

- (1931a): *The water supply problem in southern Saskatchewan*, Engineering Jour., vol. 14, p. 28-31, 1 fig.

Dealt with are the following mode of occurrence of ground water, prospecting for ground water, estimation of quantities available, results of recent work. 62; 72.

- (1931b): *Winnipeg sheet, Manitoba*, Geol. Survey Canada, Map No. 254A.

Map shows the surface deposits. No accompanying publications, nor descriptive notes on the map. Scale 1 inch to 8 miles. 62-F (West half).

- (1932): *Deep borings in the Prairie Provinces*, Geol. Survey Canada, Summary Rept. 1931, pt. B, p. 72-78.

Lists all waterfalls, records of which were received during 1931. Sed. Sask.

- (1934): *Deep borings in the Prairie Provinces*, Geol. Survey Canada, Summary Rept. 1933, pt. B, p. 169-170.

Mentions several wells being drilled in the Lloydminster area. Some geological information given about Cretaceous strata but no detailed well logs 73-F-4,5.

- (1946): *Glacial Lake Agassiz, with special reference to the mode of deformation of the beaches*, Geol. Survey Canada, G.S.C. Bull. 7, 20 pages, 6 figs.

Deals mainly with Manitoba, but shows the Campbell beaches as extending into Sask. 63-D,E.

**JOHNSTON, W. A. and WICKENDEN, R. T. D.**

- (1930): *Glacial Lake, Regina, Saskatchewan, Canada*, Royal Soc. Canada, Trans., 3d ser., vol. 24, sec. 4, p. 41-49, 1 fig.

Extent of the lake, the present topography and drainage and the character of the sediments are discussed. 62-E, 72-H-1,J,O.

- (1931a): *Groundwater resources of Moose Jaw, Saskatchewan*, Geol. Survey Canada, Summary Rept. 1930, pt. B, p. 50-64, 2 figs.

Topography and surface geology are discussed first, followed by a description of areas from which water is obtained. 72-I-5,6; 72-J-9.

- (1931b): *Moraines and glacial lakes in southern Saskatchewan and southern Alberta, Canada*, Royal Soc. Canada, Trans., 3d ser., vol. 25, sec. 4, p. 29-44, 1 plate, 1 fig.

Main reference to the glacial history of the plains area of Sask. A map shows distribution of glacial lakes, moraines and outlet channels. The drift sheet and their ages are discussed as well as the interglacial deposits. Sed. Sask.

**JOHNSTON, W. A. et al.**

- (1948): *Surface deposits, southern Saskatchewan*, Geol. Survey Canada, Paper 48-18, surface geol. map in 2 sheets.

Map only. Shows Quaternary deposits of areas 62 and 72 on scale 1 inch equals 6 miles.

**JOLLIFFE, A. W.**

- (1946): *Cornwall Bay-Fish Hook Bay area, Lake Athabasca, Saskatchewan*, Geol. Survey Canada, Special Report, 7 pages, geol. map (two sheets).

Detailed mapping on scale of 1 inch equals 400 feet of 7 square miles east of Goldfields. The various map units employed are briefly described. The economic geology is discussed, in particular the occurrences of radioactive minerals. 74-N-8.

**KEELE, JOSEPH**

- (1912): *Report on progress of investigation of clay resources*, Geol. Survey Canada, Summary Rept. 1911, p. 234-239.

Briefly mentions several occurrences of clay in southern Sask. near Weyburn, Maple Creek, Dirt Hills. No detailed discussion of the geology. Mentions Cretaceous shale exposures near Regina Beach. 62; 72.

- (1914): *Report on progress of investigation of clay resources*, Geol. Survey Canada, Summary Rept. 1913, p. 288-292.

One chapter devoted to clays in Sask. giving technical information on the quality but no discussion of geological occurrences. Sed. Sask.

- (1915): *Clay and shale deposits of the western provinces (part V)*, Geol. Survey Canada, Mem. 66, 74 pages, 8 plates.

A study of Pleistocene clays in central and eastern Sask., and of Cretaceous clays in southern Sask. Gives technical information on properties of clays mined in these areas. 62-N-12, 72-F-10; 72-H-2, 72-H-6, 72-H-8; 72-H-9, 72-H-21; 72-H-13, 72-J-5; 72-J-8; 72-O-2, 72-P-5; 73-A-5, 73-B-2.

**KEITH, M. L.**

- (1941): *MacKay Lake*, Geol. Survey Canada, Map No. 592A, with descriptive notes.

Final map previously presented in preliminary form (Paper 39-3). In the notes short descriptions are given of the rock units mapped. The mineral developments of the area are discussed briefly. Map on scale 1 inch to 1 mile. 73-P-7.

**KERR, F. A.**

- (1938): *Origin of the Kisseynew gneiss in northern Manitoba and Saskatchewan*, Abstract in: Geol. Soc. Am., Bull., vol. 49, p. 1936.

The Kisseynew gneiss of the Flin Flon area is believed to be the highly metamorphosed equivalent of the less altered Missi Series. 63-K-13.

**KERR, F. A. and RUTTAN, G. D.**

- (1936): *The development of a gneiss zone in the Flin Flon area, Manitoba*. Abstract in: Royal Soc. Canada, Proc., 3d ser., vol. 30, appendix B, sec. 4, p. XCVIII.

The origin of a gneiss zone in a series of tuffs near an intrusive is briefly discussed. 63-K-13.

**KERR, P. F.**

- (1950): *Mineralogical studies of Uraninite and Uraninite-bearing deposits*, U.S. Atomic Energy Commission, Interim Technical Report, RMO-715, 63 pages, 19 figs.

One chapter is devoted to the uranium-bearing veins of the Beaverlodge Lake area. This area was investigated for the purpose of observing the alteration effects accompanying the uraninite. The general geology is briefly discussed. Various properties were visited and the occurrence of the ore on these is described. 74-N-7, 8, 9, 10.

**KOFFMAN, A. A. et al.**

- (1948): *Flin Flon mine*, in: *Structural Geology of Canadian ore deposits*, A symposium arranged by the Can. Inst. Mining Metal., p. 295-301, 6 figs.

Brief description of the general geology and structure with several plans of different levels and a map showing the surface geology of the Flin Flon area. 63-K-13.

**LAMBE, L. M.**

- (1905a): *A new species of Hyracodon from the Oligocene of the Cypress Hills, Assiniboia*, Royal Soc. Canada, Trans., 2d ser., vol. 11, sec. 4, p. 37-42, 1 plate.

Full description of this new species. The upper jaw with teeth is figured. 72-F-10.

- (1905b): *Vertebrate paleontology*, Geol. Survey Canada, Summary Rept. 1904, p. 362-371.

Contains a report on fieldwork done in the Cypress Hills Oligocene beds. A provisional faunal list of the vertebrates collected is added. This collection was described later in greater detail, see LAMBE (1908). 72-F-10, 15.

- (1905c): *Fossil horses of the Oligocene of the Cypress Hills, Assiniboia*, Royal Soc. Canada, Trans., 2d ser., vol. 11, sec. 4, p. 43-52, 1 plate.

Full description of teeth from several species of Meshippus. The specimens are figured. 72-F-10.

- (1908): *The vertebrata of the Oligocene of the Cypress Hills, Saskatchewan*, Geol. Survey Canada, Contributions to Canadian Paleontology, vol. 3, pt. 4, 65 pages, 8 plates.

Main reference to the vertebrate paleontology of the Cypress Hills formation. Full descriptions including figures of fossils collected by various parties. See also COPE (1891). 72-F-10, 15.

## LANG, A. H.

- (1949): *Notes on prospecting for uranium in Canada*, Geol. Survey Canada, Paper 49-4, 22 pages.

General notes about uranium in Canada are followed by regional descriptions in which the deposits of the Goldfields area, Black Lake, Lac La Ronge and Wildnest Lake are briefly mentioned. 63-L-16, 73-P-6,7; 74-N-8; 74-P-3.

- (1950): *Summary account of Canadian uranium deposits*, Can. Inst. Mining and Metal., Trans., vol. 53, p. 289-296, 1 fig.

A general description of various types of deposits is followed by a summary of individual deposits in Sask. and other provinces. Of Sask. Goldfields, Black Lake and Lac La Ronge are mentioned. 73-P-2,3,6,7, 74-N-7,8,9,10, 74-P-3,4,5,6.

- (1951): *Canadian deposits of uranium and thorium*, Geol. Survey Canada, Paper 51-10, 157 pages, 1 index map, 1 separate table of minerals.

Contains general information on the mineralogy, structural type etc of uranium deposits in Canada. Describes in detail Sask. radioactive deposits. Latest and most complete reference in this particular field of investigation. 73-P; 74-N,O,P.

## LANG, A. H. et al.

- (1947): *Interim catalogue of the Geological Survey collections of outstanding air photographs*, Geol. Survey Canada, Paper 47-26, 17 pages.

Photographs not indexed, according to provinces but to subjects. Several photographs from Sask. exhibiting physiographic features such as drumlins, moraines, glacial grooving, unconsolidated sediments, meanders. Also structures such as dome and fault in Precambrian.

## LAWSON, A. C.

- (1925): *The Cypress Plain*, Univ. of California, Publications in Geol. Sciences, vol. 15, p. 153-158, 1 fig.

No specific reference to Sask. is made, but the Cypress Plain as a whole is considered and the effect of isostatic compensation upon the profile of the Cypress Plain is discussed. See also ALDEN (1924). 72-F.

## LEE, R. J.

- (1923): *The lignites of Saskatchewan*, Can. Inst. Mining and Metal., Trans., vol. 26, p. 192-205, 7 figs.

Paper deals mainly with the technological aspects of coal production. The lignite reserves of Sask. are estimated. Brief description of the various lignite fields in southern Sask. 62-E-2; 72.

## LEVERIN, H. A.

- (1946): *Peat moss deposits in Canada*, Mines Branch, Dept. of Mines Canada, Rept. No. 817, 102 pages, 9 plates, 10 figs.

Description of several peat bogs in Sask., giving analyses of some. 62-L-6; 63-D-13, 14; 63-E-5, 6, 73-A-14; 73-G-16, 73-H-4, 13.



LINK, T. A.

- (1950): *The western Canada sedimentary basin area*, Can. Inst. Mining and Metal. Trans., vol. 53, p. 266-276, 12 figs. Also in: (World Oil, 1949), vol. 129, No. 9, p. 230-248.

General paper dealing with the western provinces. The stratigraphy is discussed in broad terms. Of structural features the Moose Jaw syncline is mentioned in Sask. Sed. Sask.

McCLELLAND, W. R.

- (1951): *Survey of the copper resources of Canada*, Mines Branch, Dept. of Mines Canada, Memorandum Ser. No. 113, 88 pages, 2 maps.

Brief account on the development, production and ore reserves of the Flin Flon copper-zinc-gold property. No non-producing copper properties are reported from Sask. 63-K-13.

McCONNELL, R. G.

- (1886): *Report on the Cypress Hills, Wood Mountain, and adjacent country*, Geol. Survey Canada, Annual Rept. (New ser.), vol. 1, pt. C, 85 pages, 3 plates, 4 figs., geol. map.

Classical paper on south-eastern Sask. Is a major reference to the physiography and general geology of the area. Stratigraphic description includes faunal lists. 72-F,G,K,J.

McINNES, WILLIAM

- (1908): *Pasquia Hills and lower Carrot River region*, Geol. Survey Canada, Summary Rept. 1907, p. 41-47.

Reconnaissance survey describing topography and Cretaceous rocktypes in surface outcrops, with paleontological contents 63-E.

- (1909): *Explorations on the Churchill River and South Indian Lake*, Geol. Survey Canada, Summary Rept. 1908, p. 87-92.

Preliminary notes later to be incorporated in the more detailed report McINNES (1913). 63-E,L,M; 73-P.

- (1910): *Lac La Ronge district, Saskatchewan*, Geol. Survey Canada, Summary Rept. 1909, p. 151-157.

Brief description of general geological features followed by discussion of the coal and glass sand deposits along Wapawekka Lake. 73-1-15,16; 73-P-1,2,3,6,7,8.

- (1911): *Saskatchewan River district*, Geol. Survey Canada, Summary Rept. 1910, p. 169-173.

Preliminary account of fieldwork done to be presented later in greater detail in McINNES (1913). 63-L.

- (1913): *The basins of the Nelson and Churchill rivers*, Geol. Survey Canada, Mem. 30, 146 pages, 19 plates, geol. map (published in 1914).

An important reference to east central and northern Sask. Compiles all geologic knowledge of this area prior to 1913. Extensive geographical descriptions of routes travelled. Prec. Sask., 63, 63-E, 63-L,M; 64, 64-E,L,M; 73, 73-I; 73-1-15,16; 73-P; 74.

MacKAY, B. R.

- (1949): *Coalfields of southern Saskatchewan*, Geol. Survey Canada, Map No. 933A.

No accompanying publication. No descriptive notes on map. Map shows lignite occurrences and location of coal mines printed on the geological map of the region. Scale 1 inch to 12 miles. 62, 72.

MacKAY, B. R. et al.

- (1936): For reports on the ground-water supplies of the Rural Municipalities of Sask. see GEOLOGICAL SURVEY CANADA (1936).

McLARTY, D. M. E.

- (1936a): *Lac La Ronge sheet (West half)*, Geol. Survey Canada, Map No. 357A.

No accompanying publication. Map is provided with descriptive marginal notes. Scale 1 inch to 4 miles. For east half see McLARTY, 1936b. 73-P (West half).

—(1936b): *La Ronge sheet (East half)*, Geol. Survey Canada, Map No. 358A.

No accompanying publication. Map is provided with descriptive marginal notes. Scale 1 inch to 4 miles. For west half see McLARTY (1936a) 73-P (East half).

**McLEAN, A.**

(1917): *Southeastern Saskatchewan*, Geol. Survey Canada, Summary Rept. 1916, p. 156-159.

Investigations centered around Estevan. Stratigraphy briefly discussed with sections given. Economic deposits of coal, clay and possible gas are present. 62-B,F.

—(1918): *Lignite area of southern Saskatchewan*, Geol. Survey Canada, Summary Rept. 1917, pt. C, p. 35-41.

Deals mainly with the coal deposits near Estevan. A composite section of this district is presented. In addition many measured sections given. 62-E.

—(1921): *Lignite in Saskatchewan*, Can. Mining Inst., Trans., vol. 23, p. 308-323, 5 figs.

Presents a condensed stratigraphic section of the Estevan district combining field data and drill records. The various seams are described and the reserves estimated. The mines in the district are discussed. 62-B,2.

**McLEARN, F. H.**

(1928): *Stratigraphy, structure, and clay deposits of Eastend area, Cypress Hills, Saskatchewan*, Geol. Survey Canada, Summary Rept. 1927, pt. B, p. 21-53, geol. map (G.S.C. Map No. 212A).

Detailed study of small area in Cypress Hills. Stratigraphy is fully dealt with. Chapter on origin of Whitmud sediments. Structure and economic deposits of clay and coal are discussed. Map on scale 1 inch to 1 mile. 72-P-7,10.

—(1929): *Southern Saskatchewan*, Geol. Survey Canada, Summary Rept. 1928, pt. B, p. 30-44.

Study of stratigraphy and structure in connection with the geological map of southern Sask. Main emphasis is on the description of the Cretaceous stratigraphic units. Some information about clay and coal in the area is added. 72-F,G.

—(1930): *Stratigraphy, clay and coal deposits of southern Saskatchewan*, Geol. Survey Canada, Summary Rept. 1929, pt. B, p. 48-64.

Detailed discussion of the stratigraphy with ten generalized stratigraphic sections combined in one correlation table. The Whitmud sediments are discussed as to age and origin. One chapter is devoted to zones and horizon markers. Clay and coal occurrences are described. 72-H-3,4,5,6.

—(1931): *Some clay deposits of Willowbunch area, Saskatchewan, Canada*, Geol. Survey, Summary Rept. 1930, pt. B, p. 31-49.

Brief discussion of stratigraphy is followed by extensive study of clay sample giving the technical properties in tabulated form. 72-H-3,4,5,6.

—(1932): *Problems of the Lower Cretaceous of the Canadian interior*, Royal Soc. Canada, Trans., 3d ser., vol. 26, sec. 4, pp. 157-175, 6 figs.

The paper deals mainly with Alberta but occasional reference to Sask. is made. Four paleogeographic maps are presented. Sed. Sask.

—(1944a): *Revision of the Lower Cretaceous of the western interior of Canada*, Geol. Survey Canada, Paper 44-17, 6 pages. Also a 2nd ed. published 1945, 14 pages, 12 fossil plates.

Correlations of the Lower Cretaceous of Sask. with adjacent areas are given. Extensive faunal lists are provided. Few references to specific Sask. occurrences but general paper on Lower Cretaceous of prairie provinces. Sed. Sask.

—(1944b): *Revision of the paleogeography of the Lower Cretaceous of the western interior of Canada*, Geol. Survey Canada, Paper 44-32, 11 pages, 5 paleogeographic maps.

The geologic history of the plains in Lower Cretaceous time is presented with the aid of 5 paleogeographic maps. The Lower Cretaceous is deeply buried in southern Sask. only well-data are used here, and few specific references of Sask. are given. Sed. Sask.

**McLEARN, F. H. and McMAHON, J. F.**

(1934): *Buff and white-burning clays of Southern Saskatchewan*, Geol. Survey Canada, Summary Rept., 1933, pt. B, p. 32-157.

Main reference to the geological occurrence of clays in Southern Sask. Many stratigraphic sections given and individual occurrences are described. Also technical information on quality. 62, 72.

**McLEARN, F. H. and WICKENDEN, R. T. D.**

- (1936): *Oil and gas possibilities of the Hudson Bay Junction area, Saskatchewan*, Geol. Survey Canada, Paper 36-8, 11 pages, index map, outcrop map, 2 sections.

Main emphasis on the Cretaceous stratigraphy. Important reference to the surface geology of this area. Scale of map 1 inch to 3 miles. 63-D-9,16.

- (1937): *The structure of Thunder Hill, Saskatchewan, and Manitoba*, Abstract in: Royal Soc. Canada, Proc., 3d ser., vol. 31, Appendix B, sec. 4, p. cxliv.

Structure determined by position of Cretaceous beds in relation to those on Swan River to the south and Big Woody River to the north. Diamond drill cores show dips up to 78°. 63-D-4.

**McLEISH, JOHN**

*Annual report on the mineral production of Canada*, Mines Branch Dept. of Mines Canada.

These reports were published from 1906 to 1920 and contain statistical mining data. For later years see BUREAU OF STATISTICS which published these reports annually from 1921-1933 and MINES BRANCH from 1934-1949 (except for the years 1939-1943, when no reports were issued). Prior to 1906 mineral statistics were published by the Geol. Survey Canada but Saskatchewan is not listed as such in these early accounts.

**McMURCHY, R. C.**

- (1938a): *Foster Lake sheet (East half), northern Saskatchewan*, Geol. Survey Canada, Map No. 433A, with descriptive notes.

Final map previously published in preliminary form. (Paper 37-16). For west half of this area see McMURCHY (1938b). Rocktypes mapped are briefly discussed. Mining activity near Rottenstone Lake discussed. Scale 1 inch to 4 miles. 74-A (East half).

- (1938b): *Foster Lake sheet (West half), northern Saskatchewan*, Geol. Survey Canada, Map No. 434A, with descriptive notes.

Final map previously published in preliminary form. (Paper 37-17). Short description of rock types mapped in this reconnaissance survey. No mineral occurrences of economic importance are mentioned. For east half of this area see McMURCHY (1938a). Scale 1 inch to 4 miles. 74-A (West half).

**MADDOX, D. C.**

- (1932): *The Darmody-Riverhurst artesian water area, southern Saskatchewan*, Geol. Survey Canada, Summary Rept. 1931, pt. B, p. 58-71, 1 fig.

Water sand is in Cretaceous Bearpaw shale or possibly in the upper part of the Belly River formation. Its elevation in all the wells of the area is given and conclusions as to the structure are drawn. 72-J-9,10,15,16.

- (1933): *The artesian water areas of the west half of Rush Lake and the east half of Elbow quadrangles, southern Saskatchewan*, Geol. Survey Canada, Summary Rept. 1932, pt. B, p. 75-89, 2 plates.

Short description of geology of area. Chemical analysis of water given. All water wells in area are listed as to elevation to top of water sand in Cretaceous bed rock. 72-J-5,6,11,12,13,14, 72-O-1,2,3,4,7,8,9,10.

**MALCOLM, WYATT**

- (1913): *Oil and gas prospects of the northwest provinces of Canada*, Geol. Survey Canada, Mem. 29-E, 99 pages, geol. map of prairie provinces, 9 plates, 2 figs.

Mainly a general discussion of stratigraphy of prairie provinces. Some logs given of shallow wells in Sask. 62; 63; 63-E, 72; 72-F, 72-1-2,6,7,16. 72-J-14; 73; 73-B-7; 74.

**MAWDSLEY, J. B.**

- (1934a): *A brief outline of the geological history of northern Saskatchewan and some prospecting considerations*, Prov. of Sask., Dept. of Nat. Res., Annual Rept. 1933, Appendix 1, 7 pages.

Main emphasis is on a popular account of the prospecting possibilities of Sask. north country. A short description of the various rock types and their age relationships precedes the prospecting considerations. Free. Sask.

- (1934b): *A brief outline of the geological history of the northwest shore of Lac La Ronge and the Beaver Lake areas*, Prov. of Sask., Dept. of Nat. Res., Annual Rept. 1933, Appendix 2, 20 pages.

First 5 pages deal with northwest shore of Lac La Ronge, describing the general geology and in detail the geology of several smaller areas and prospects. The remaining 15 pages are devoted to Amisk Lake. Described are 13 claims in detail. 63-L-9, 73-P-3.

- (1940): *The Sulphide Lake gold-bearing belt, Lac La Ronge district, Saskatchewan*, Can. Inst. Mining and Metal., Trans., vol. 43, p. 287-298, 2 figs.

Main reference to this gold-bearing area. The general geology as well as individual occurrences of quartz veins carrying gold are discussed. 73-P-6,7.

- (1944): *Prospecting possibilities in northern Saskatchewan*, Precambrian, vol. 17, No. 6, p. 4-7, 6 figs.

Brief discussion of prospecting possibilities in the following areas: Amisk Lake, Lac La Ronge, west of south end of Reindeer Lake, east end of Lake Athabaska, Goldfields. The article is popular in style and written to encourage further prospecting. Prec. Sask.; 63-L (East half), 73-P (South half), 74; 74-A (South half), N (East half), O (East half).

- (1946): *Rollerstone Lake area, Saskatchewan*, Geol. Survey Canada, Paper 46-24, 15 pages, geol. map, 1 fig.

Mapping was done on scale 1 inch equals 1,000 feet and structural features are indicated. Latest publication to this former mining area. 74-A-7.

- (1948): *Northern Saskatchewan, geological mapping and mining development*, Western Miner. vol. 21, p. 40-43, 2 figs.

The paper gives the history of exploration, geological mapping and mineral discoveries in Precambrian Sask. Prec. Sask.

- (1949): *Pine Channel area, Lake Athabaska district, Saskatchewan*, Geol. Survey Canada, Paper 49-27, 46 pages, geol. map.

Area was mapped in detail on scale of 1 inch equals 1,500 feet. Main emphasis is on the petrography of the metamorphic and igneous rocks and on their structures. The mineral deposits of the area are described. 74-O-7,8.

- (1950): *The geology of the Charlebois Lake area, Athabaska mining division, northern Saskatchewan*, Prov. of Sask., Dept. of Nat. Res., Precambrian Geology Series, Rept. 5, 30 pages, 1 plate, 4 diagrams, geol. map.

Main reference to the uraninite-bearing pegmatites of this area. Full discussion of the general geology, followed by description of individual claims. Map on scale 1 inch to 1½ mile. 74-P-7.

- (1951a): *Charlebois Lake area, Athabaska mining division, North-eastern Saskatchewan*, Prov. of Sask., Dept. Nat. Res., Prelim. Rept., 5 pages, geol. map.

Brief discussion of the general geology. The mineralized zones and bodies are treated individually. A map showing the relationship between the main geological features and the radioactive deposits is included. Map on scale 1 inch to 2 miles. 74-P-7.

- (1951b): *Find uranium oxide in pegmatite south of Charlebois Lake, Saskatchewan*, The Precambrian, vol. 24, p. 35.

Brief preliminary report on the radioactive occurrences in the area. The radioactive mineral here probably is uraninite and not pitchblende. 74-P-7.

#### MAWDSLEY, J. B. and GROUT, F. F.

- (1951): *The geology of the Stanley map area, Churchill mining division, northern Saskatchewan*, Prov. of Sask., Dept. of Nat. Res., Precambrian Geology Series, Rept. 4, 31 pages, 3 plates, geol. map.

Area mapped on scale one inch equals one mile. Full discussion of rock types, structures and radioactive mineral occurrences. Main reference to this newly developed area. 73-P-7,8.

#### MEEK, F. B.

- (1859): *Remarks on the Cretaceous fossils collected by Professor Henry Y. Hind, on the Assiniboine and Saskatchewan exploring expedition with descriptions of some new species*, in: HIND (1859) constituting Chapter XIX, 4 pages, 2 plates.

Described are specimens of plants, pelecypods, gastropods, and cephalopods collected from various localities in Sask. Sed. Sask.

## MILLER, A. H.

- (1927): *Gravity in western Canada*, Royal Soc. Canada, Trans., 3d ser., vol. 21, sec. 4, p. 175-187, 2 figs.

Discussion of the general results obtained during a gravity survey of western Canada. For more detailed information giving observations at all stations see MILLER (1929a). Sask.

- (1929a): *Gravity in western Canada*, Canada Dept. Interior, Publications of the Dominion Observatory, vol. VIII, No. 9, p. 245-329, 2 maps.

Main reference to gravity data in Sask. The relation between the gravity anomalies and the geological formations is discussed. The regional tendencies of the anomalies shown on the accompanying gravity map are analysed. The observations of each station are tabulated. Sask.

- (1929b): *The gravity survey of Canada*, U.S. National Research Council, Bull., No. 68, p. 1-3.

Briefly mentions an area of positive anomaly in southern Sask. For more detailed information see MILLER (1929a). Sask.

- (1949): *The geology of the Windrum Lake area, Saskatchewan*, Prov. of Sask., Dept. of Nat. Res., Precambrian Geology Series, Rept. 3, 24 pages, 9 figs., geol. map.

<sup>1</sup> Main reference to this area which was mapped on scale 1 inch equals  $\frac{1}{4}$  mile. The major part of the report is devoted to the description of rock types mapped. No commercial important mineral deposits are within the area. 74-A-1.

## MINES BRANCH

### *The Canadian mineral industry.*

Under this title annual reports were published by the Mines Branch, Dept. of Mines Canada from 1934-1949 (not published during the war years 1939-1943). The reports contain statistical mining data. For production statistics of earlier years see McLEISH from 1906-1920 and BUREAU OF STATISTICS from 1921-1933. Prior to 1906 these annual reports were issued by the Geol. Survey Canada but Saskatchewan was not listed as such in these earliest accounts.

## MITCHELL, J. et al.

- (1942): *Soil survey of Mortlach, Chaplin and Lake Johnstone area, including Rural Municipalities Nos. 132, 133, 134, 162, 163, and 164*, Univ. of Sask., Soil Survey Rept., No. 11, 48 pages, 4 plates, 5 figs., 6 soil maps.

This publication differs in several respects from reports issued previously (see DEPT. OF SOILS). The work has been carried out in greater detail. The maps are on larger scale. 72-I-4,5; 72-J-1,2,7,8.

- (1944): *Soil survey of southern Saskatchewan from township 1 to 48 inclusive*, Univ. of Sask., Soil Survey Rept., No. 12, 259 pages, 26 plates, 9 figs., with 4 soil maps under separate cover.

With MITCHELL et al. (1950) the main reference to the soils and surface deposits on Sedimentary Sask. The results of previously published reports are included. The section of geology is listed separately under EDMUNDS (1950). Maps on scale 1 inch to 6 miles Sed. Sask.

- (1950): *Soil survey of Saskatchewan covering the agriculturally settled areas north of township 48*, Univ. of Sask., Soil Survey Rept., No. 13, 241 pages, 38 plates, 10 figs., with 4 soil maps under separate cover.

See also MITCHELL et al. (1944). Both reports describe the physiography of the areas mapped and the various soil associations. Maps on scale 1 inch to 6 miles. Sed. Sask.

## MOZLEY, ALAN

- (1932): *A new interglacial pulmonate mollusk from the Province of Saskatchewan*, Am. Midland Naturalist, vol. 13, p. 236-240, 5 figs.

Describes and figures *Lymnaea rahlii saskatchewanensis* subsp. nov. from Beaubier, Sask. The age of the deposit is given as Interglacial. No discussion of the stratigraphy. 72-H-1; 73-A-1.

## NESS, JOHN

- (1921): *The search for oil in the west*, Can. Inst. Mining and Metal., Trans., vol. 24, p. 31-59, 20 figs.

Briefly mentions the exploration by Imperial Oil in the Cretaceous of southern and western Sask. 72; 73.

**NININGER, H. H.**

(1932): *The Springwater meteorite*, Am. Mineralogist, vol. 17, p. 396-400, 5 figs.

Description of a pallasite-meteorite found about 100 miles W. of Saskatoon. The specimen is compared with other pallasites 72-N-16.

—(1936): *The Bruno meteorite*, Am. Jour. Sci., 5th ser., vol. 31, p. 209-222, 7 figs.

Description of form and markings on surface. Includes account of chemical and metallographical characters 73 A-5.

**OFFORD, R. J. and GOODSPEED, F. E.**

(1947): *Analysis of natural gas from Saskatchewan and Alberta*, Fuel Research Laboratories, Ottawa.

**O'NEILL, J. J. and GUNNING, H. C.**

(1934): *Platinum and allied metal deposits of Canada*, Geol. Survey Canada, Econ. Geol. Ser. No. 13, 165 pages, 1 plate, 9 figs.

Mentions platinum palladium occurrence in the vicinity of Rottenstone Lake. No discussion of the geology 74-A-7

**PALLISER, JOHN**

(1859, 1863): See under HECTOR (1859) and HECTOR (1863).

**PARKS, W. A.**

(1916): *Report on the building and ornamental stones of Canada. Vol. IV, Provinces of Manitoba, Saskatchewan and Alberta*, Mines Branch, Dept. of Mines Canada, Rept. No. 388, 333 pages, 55 plates, 7 figs.

General introduction to the geology of the Prairie Provinces is given. The stones discussed are sandstone from the Souris River Valley, limestones and dolomites from the drift near Prince Albert, Saskatoon and other localities. 62-E-2, 73-B-2, 73-H-4.

—(1925): *Buried Indian workshop with remains of an extinct mammal*, Geol. Soc. Am., Bull., vol. 36, p. 429-434, 1 plate.

Locality near Dundurn. Describes and figures the teeth of a new genus of Antilocaprid *Neomeryx finni*. The stratigraphy is not discussed. 72-O-15.

**PENHALLOW, D. P.**

(1903): *Notes on Tertiary plants*, Royal Soc. Canada, Trans., 2d ser., vol. 9, sec. 4, p. 33-95, 12 plates.

Describes *Taxodium distichum* from Souris River. Figure of thin-section given. 62-E-2

—(1908): *Report on Tertiary plants of British Columbia, collected by Lawrence M. Lambe in 1906, together with a discussion of previously recorded Tertiary floras*, Geol. Survey Canada, Rept. No. 1013, 167 pages, 34 figs.

Localities from which plants were collected in Sask. are Roche Percee in the Souris River Valley, the Great Valley (south of Big Beaver) and Porcupine Creek (now Poplar River) east of Wood Mountain. See also DAWSON (1875) who reported previously on these fossils. Descriptions, bibliography and many illustrations of the plants collected. Important reference to the paleobotany of southern Sask. 62-E-2, 73-H-3,4

**PERRY, P. C.**

(1949): *Precipitation-evaporation relationship for the Canadian prairie*, Engineering Jour., vol. 32, p. 468-473, 5 figs.

Paper deals mainly with present climatic aspects of the prairies. It contains a map showing the drainage systems of the area on which are indicated basins with interior drainage. Sed. Sask.

**PORTER, J. B. et al.**

(1912): *An investigation of the coals of Canada with reference to their economic qualities*, Mines Branch, Dept. of Mines Canada, Rept. No. 83, ill., maps.

Part II of Volume I of this report deals with the coal fields of Canada. The Souris coal field in Saskatchewan is discussed. The description is based on previously issued reports 62-E-2.

**RAWSON, D. S. and MOORE, J. E.**

- (1944): *The saline lakes of Saskatchewan*, Can. Journal of Research, vol. 22, sec. D, p. 141-201, 9 figs.

Paper divided into two parts, the first dealing with physical and chemical studies, the second with biological studies. The geology, physiography and climate of southern Sask. are outlined. Sed. Sask.

**REINECKE, LEOPOLD**

- (1919): *Roid materials in the vicinity of Regina, Saskatchewan*, Geol. Survey Canada, Mem. 107, 28 pages, distribution map, 2 plates, 3 figs.

Mainly discussion of location, texture, lithological and mineralogical composition of gravel in the area and its commercial possibilities. 72-1-6, 7, 8, 9, 10, 11.

**RICE, H. M. A.**

- (1950): *Mudjatik-Geikie*, Geol. Survey Canada, Map. No. 1007A.

No accompanying publication. Map without marginal descriptive notes. Scale 1 inch to 8 miles 74-A, B, G, H.

**RICHARDSON, SIR JOHN**

- (1823): *Geognostical observations*, Appendix No. 1 in: FRANKLIN, SIR JOHN (1823), *Narrative of a journey to the shores of the Polar Sea in the years 1819, 1820, 1821, and 1822*, London, John Murray, 768 pages, ill. Appendix No. 1, p. 497-538.

Description of general geological features and rock-types observed during a trip from The Pas-Cumberland House-Amisk Lake-Sturgeon Weir River-Churchill River-Ile a la Crosse and from Cumberland House up the Saskatchewan River to near Carlton and from there to Ile a la Crosse. 63-(North half); 63-E-L; 73 (North half).

- (1851): *Arctic searching expedition: A journal of a boat voyage through Rupert's Land and the Arctic Sea in search of the discovery ships under command of Sir John Franklin. With an appendix on the Physical Geography of North America*, London, Longman, Brown, Green and Longmans, 2 vol., ill. (also other editions).

Brief mention of the geological aspects of the country around Cumberland House and the Churchill River. The older report by RICHARDSON (1823) gives more detailed information 63 (North half).

**RIES, HEINRICH**

- (1911a): *Clay and shale deposits of western Canada*, Geol. Survey Canada, Summary Rept. 1910, p. 174-180.

Describes shales associated with coals in the Estevan area. One stratigraphic section given 62-E-2.

- (1911b): *The clay and shale deposits of the western provinces of Canada*, Can. Mining Inst., Journal (Trans.), vol. 14, p. 351-394, 7 plates, 3 figs.

Discussed are the shales of the Souris River Valley and the Dirt Hills with emphasis on their physical properties. 62-E-2; 72-H-14.

- (1913): *Clay and shale deposits of the western provinces of Canada*, Can. Mining Inst., Trans., vol. 16, p. 528-537.

Briefly mentions the occurrence of surface clays and shales at various points in Sask. No discussion of stratigraphy or of technology of these clay resources Sed. Sask.

**RIES, HEINRICH and KEELE, JOSEPH**

- (1912): *Preliminary report on the clay and shale deposits of the western provinces*, Geol. Survey Canada, Mem. 24-E, 231 pages, geol. map, 61 plates, 10 figs.

Discusses mainly clay deposits near Prince Albert, Estevan, Dirt Hills. Properties of these clays are given. 62-E-2; 72-B-2, 9; 73-H-4.

- (1913): *Report on the clay and shale deposits of the western provinces (Part II)*, Geol. Survey Canada, Mem. 25, 105 pages, 40 plates, 6 figs.

Deals mainly with properties of the clays studied in southern Sask. Few remarks about the geology. 62-L-12; 72-F-6, 10; 72-H-9, 72-I-3, 7, 15, 73-B-2.

**ROBINSON, H. R.**

- (1945): *New Baculites from the Cretaceous Bearpaw formation of southwestern Saskatchewan*, Royal Soc. Canada, Trans., 3d ser., vol. 39, sec. 4, p. 51-54, 1 plate.

Full description of one new species and one new variety of *Baculites*. Figures given. No discussion of the stratigraphy. 72-F-6.

**ROBINSON, S. C.**

- (1950): *Mineralogy of the Goldfields district, Saskatchewan*, Geol. Survey Canada, Paper 50-16, 38 pages, 1 fig.

Deals with the uranium minerals, other minerals with which they are associated and the types of deposits in the Goldfields-Martin Lake map areas. Report is supplemental to CHRISTIE and KESTEN (1949). 74-N-7,8,9,10.

**ROSE, BRUCE**

- (1914): *Willowbunch coal area, Saskatchewan*, Geol. Survey Canada, Summary Rept. 1913, p. 153-164, coal distribution map.

The stratigraphy of the area is discussed. Many sections given. Economic coal and clay deposits described. 72-II-2,3,4,5,6,7,10,11,12.

- (1915): *Wood Mountain coal area, Saskatchewan*, Geol. Survey Canada, Summary Rept. 1914, p. 64-67, coal distribution map.

Brief description of the stratigraphy followed by a discussion of the coal deposits giving analyses of coals. 72-G-1,2,3,6,7,8.

- (1916): *Wood Mountain-Willowbunch coal area, Saskatchewan*, Geol. Survey Canada, Mem. 89, 103 pages, geol. map, 7 plates, 1 fig.

Discusses general topographic character, stratigraphy and economic geology of area. Stratigraphic divisions employed are obsolete now, otherwise important reference to this area. 72-G,II.

**ROSS, S. H.**

- (1938): *Geography and geology of the Rottenstone Lake area, northern Saskatchewan*, Abstract in: Geol. Soc. Am., Bull., vol. 49, p. 1942.

Short description of the general geology and of a sulphide replacement of a schistose inclusion in granite. 74-A-7.

**RUSSELL, L. S.**

- (1930): *Upper Cretaceous dinosaur faunas of North America*, Am. Philos. Soc. of Philadelphia Proc., vol. 69, p. 133-159, 1 fig.

Discussion of the various dinosaur-bearing sections by states and provinces. Correlation table presented. A list of dinosaurs (no description) from the Ravenscrag in Sask. near Cypress Hills and Wood Mountain is given. The stratigraphy is briefly discussed. 72-F,G.

- (1932): *Fossil non-marine Mollusca from Saskatchewan*, Royal Can. Inst., Trans., vol. 18, pt. 2, p. 337-341, 6 figs.

Listed are molluscs obtained from the Cretaceous "Sandstone E" near Willows, the Whitemud formation in Big Muddy Valley and from the Tertiary Ravenscrag formation exposed in many places in southern Sask. Three new species are described and figured. 62-F; 72-F,G,H; 72-II-3,12.

- (1934a): *Fossil turtles from Saskatchewan and Alberta*, Royal Soc. Canada, Trans., 3d ser., vol. 28, sec. 4, p. 101-112, 6 plates.

The turtles were collected from the Ravenscrag formation as exposed in the Moriaff Creek and Big Muddy Valley of Southern Sask. The fossils are fully described and figured. 72-G-2, 72-II-2.

- (1934b): *Pleistocene and Post-Pleistocene molluscan faunas of southern Saskatchewan*, Can. Field-Naturalist, vol. 48, p. 34-37, 11 figs.

Faunal lists of specimens collected from interglacial and post-glacial strata are given as well as from living mollusca. A brief discussion is added. 72-F-9, 72-G-8; 72-II-1; 72-J-1; 72-O-12.

- (1934c): *Revision of the lower Oligocene vertebrate fauna of the Cypress Hills, Saskatchewan*, Royal Can. Inst., Trans., vol. 20, pt. 1, p. 49-67, 8 figs.

Gives complete faunal list of all vertebrates collected, followed by a systematic description of new genera and species and of material in need of revision. Main summary references to this subject. 72-F-10.



- (1936): *New and interesting mammalian fossils from western Canada*, Royal Soc. Canada, Trans., 3d ser., vol. 30, sec. 4, p. 75-80, 1 plate.
- Two vertebrate fossils (*Colpdon occidentalis* and *Sibarus? montanus*) from the lower Oligocene Cypress Hills formation are described and figured. 72-F-10.
- (1938): *The skull of Hemipsalodon grandis, a giant Oligocene creodont*, Royal Soc. Canada, Trans., 3d ser., vol. 32, sec. 4, p. 61-66, 5 plates.
- The specimen was collected in the Cypress Hills and is fully described and figured. The stratigraphy of the discovery area is not discussed. 72-F!
- (1939): *Land and sea movements in the Late Cretaceous of western Canada*, Royal Soc. Canada, Trans., 3d ser., vol. 33, sec. 4, p. 81-99, 8 figs.
- Largely a paleogeographical discussion, covering all three prairie provinces. Main paper on the geologic history of the Upper Cretaceous in this area. Sed. Sask.
- (1940a): *Titanotheres from the lower Oligocene Cypress Hills formation of Saskatchewan*, Royal Soc. Canada, Trans., 3d ser., vol. 34, sec. 4, p. 89-100, 5 plates.
- Mainly a systematic description of the fossil vertebrates obtained from Hazel Hunter Quarry. The stratigraphy of the quarry is briefly described. 72-F-10.
- (1940b): *Studies of the Tertiary gravel deposits of southern Saskatchewan*, Abstract in: Royal Soc. Canada, Proc., 3d ser., vol. 34, Appendix D, sec. 4, p. 158.
- States that the Tertiary gravel deposits east of the Cypress Hills range in age from late Eocene to middle Miocene 72-F.
- (1940c): *Discovery of a marine fauna in Eastend formation of Saskatchewan, Canada*, Abstract in: Geol. Soc. Am., Bull., vol. 51, No. 12, pt. 2, p. 1776.
- The complete results of the investigations were later represented by the writer in a full length article under a different title (RUSSELL, 1943). 72-F-10.
- (1941): *Pleistocene horse remains from Saskatchewan*, Abstract in: Royal Soc. Canada, Proc., 3d ser., vol. 35, Appendix C, sec. 4, p. 188.
- Mention is made of teeth and bones of horses obtained from a gravel pit near Saskatoon. For full length article on this subject, see RUSSELL, (1943a). 73-B-2.
- (1943a): *Pleistocene horse teeth from Saskatchewan*, Journal of Paleontology, vol. 17, p. 110-114, 13 figs.
- Full description of the teeth collected, which are also figured. Discussion of the geological age, presenting a stratigraphic section of the gravel deposit. 73-B-2.
- (1943b): *Marine fauna of the Eastend formation of Saskatchewan*, Journal of Paleontology, vol. 17, p. 281-288, 3 plates, 3 figs.
- Systematic descriptions of the pelecypods collected are given including many figures. These are preceded by an interpretation of the fauna as to the stratigraphic position of the beds in which the fossils are found. 72-F-10.
- (1947): *Late Cretaceous and early Tertiary correlation in Alberta and Saskatchewan*, Abstract in: Geol. Soc. Am., Bull., vol. 58, p. 1223.
- The views presented in this abstract are the same as given later by the same author (RUSSELL, 1950) in a full length article under a different title. 72-F.
- (1949): *Geology of the southern part of the Cypress Hills, southwestern Saskatchewan*, Prov. of Sask., Dept. of Nat. Res., Petroleum Geology Series, Rept. 1, 57 pages, 7 plates, 1 cross section, structure map.
- Major reference to the Cypress Hills, and especially to its stratigraphy which is fully treated with many sections given. The local structure was mapped by plane table, on a scale  $\frac{1}{4}$  inch to 1 mile. 72-F-5,6,7,10,11,12.
- (1950a): *Correlation of the Cretaceous-Tertiary transition in Saskatchewan and Alberta*, Geol. Soc. Am., Bull., vol. 61, p. 27-42, 4 figs.
- Revised correlations are given between sections in southwestern Sask. and neighboring areas in Alberta. The stratigraphy of the Cypress Hills is discussed in the light of new investigations. 72-F.
- (1950b): *The Tertiary gravels of Saskatchewan*, Royal Soc. Canada, Trans., 3d ser., vol. 44, sec. 4, p. 51-59.
- Most up to date summary of the various Tertiary gravels in the southwestern part of Sask. The ages of these gravels are determined by diagnostic vertebrate remains. 72-F,G,11; 72-F-10; 72-J-5.

**RUSSELL, L. S. and WICKENDEN, R. T. D:**

- (1933): *An upper Eocene vertebrate fauna from Saskatchewan*, Royal Soc. Canada, Trans., 3d ser., vol. 27, sec. 4, p. 53-66, 1 fig., 1 plate.

Fauna was obtained from gravels southeast of Swift Current formerly thought to be of Oligocene age. The Tertiary stratigraphy and physiography is discussed. The specimens are described and figured 72-J-5.

**RUTHERFORD, R. L.**

- (1924): *Corrosion by saline waters*, Royal Soc. Canada, Trans., 3d ser., vol. 18, sec. 4, p. 31-37, 1 plate.

Describes the decay of granitic and gneissic boulders that are periodically bathed by extremely salt water. The Sask. occurrence is Senlac Lake. The phenomenon is described and explained. 73-C-5.

**SATTERLY, JACK**

- (1932): *Pelican Narrows area, Saskatchewan*, Geol. Survey Canada, Summary Rept. 1931, pt. C, p. 26-36, geol. map.

Reconnaissance survey. Short description of rock-types mapped along rivers and lakes. Topography and glacial geology discussed. The claims of the area were investigated and are described. Map on scale 1 inch to 4 miles. 63-M; 63-M-11; 73-P-8.

**SELWYN, A. R. C.**

- (1874): *Observations in the Northwest Territory on a journey across the plains from Fort Garry to Rocky Mountain House, returning by the Saskatchewan River and Lake Winnipeg*, Geol. Survey Canada, Rept. of Progress 1873-1874, p. 17-62.

Early reconnaissance survey with day by day description of journey made. Observations are mainly concerned with the topography, vegetation etc. Few remarks about the geology as seen in surface exposures in Sask. Sed. Sask.

- (1877): *Boring made on Swan River, near Fort Pelly, in 1875*, Geol. Survey Canada, Rept. of Progress 1875-1876, p. 292-293.

Well drilled to 501 feet, in Cretaceous strata, Short description of beds penetrated. 62-N-13.

- (1881): *Report on boring operations in the Souris River valley*, Geol. Survey Canada, Rept. of Progress 1879-1880, pt. A, 55 pages, 1 fig., 3 plates.

General discussion of the stratigraphy of the coal-bearing Tertiary strata in southern Sask. Sections as measured in outcrop given. Description of samples from 4 bore holes 62-E, 72-H,G.

**SELWYN, A. R. C. and DAWSON, G. M.**

- (1884): *Descriptive sketch of the physical geography and geology of the Dominion of Canada*, Montreal, 55 pages.

Prepared to accompany geologic map of Canada. The Western Section, west of Red River valley is discussed by DAWSON. The material was derived from previously published reports.

**SHAUB, B. M.**

- (1950): *Microstylolites in Pre-Cambrian quartzite: A discussion*, Jour. Geol., vol. 58, p. 650-652.

The writer gives a different account of the origin of the stylolites described by CONYBEARE (1949) from the Ace Lake area near Goldfields. For reply see CONYBEARE. (1950). 74-N-10.

**SHEPPARD, GEORGE**

- (1921): *Recent development work relating to petroleum in western Canada*, Can. Inst. Mining and Metal., Trans., vol. 24, p. 60-74, 10 figs.

Detailed discussion of the surface structure (a minor thrust fault in the Bearpaw) along Woodpile Coulee in the extreme southwestern corner of Sask. 72-F-4.

**SIMPSON, H. E.**

- (1930): *Ground water resources of Regina, Saskatchewan*, Geol. Survey Canada, Summary Rept. 1929, pt. B, p. 65-111.

Topography and surface geology are discussed more broadly than the stratigraphy of the underlying Cretaceous. The paper is mainly concerned with technical information on available water 72-I

SLOSS, L. L.

- (1950): *Paleozoic sedimentation in Montana area*, Am. Assoc. Petrol. Geol., Bull., vol. 34, p. 423-451, 11 figs.

The area under discussion includes the sedimentary part of Sask. All Paleozoic systems are considered separately as to stratigraphic relations, facies and isopachs (illustrated) and tectonic control. Sed. Sask.

SPENCE, H. S.

- (1924): *Bentonite*, Mines Branch, Dept. of Mines Canada, Rept. No. 626, 36 pages, 14 plates, 2 figs.

Mentions occurrences of bentonite in Pasquia Hills and in southwestern part of the province. Those near Knollys are the most promising. A section is given from this locality as well as from St. Victor. 63-E-8.9; 72-F-5.7.

SPENCER, J. W.

- (1876): *Report on the country between the upper Assiniboine River and lakes Winnipegosis and Manitoba*, Geol. Survey Canada, Rept. of Progress 1874-1875, p. 57-70, 1 fig.

Deals mainly with Manitoba. Brief mention of the Assiniboine Valley. See also BELL (1876). 62-N.

SPROULE, J. C.

- (1938a): *Mudjatik area, Saskatchewan*, Geol. Survey Canada, Paper 38-8, 13 pages, 2 geol. maps.

Reconnaissance survey with short description of rock types and structures mapped. No valuable mineral deposits have been found but further prospecting is recommended for the Vermilion Lake-Black Birch Lake area. Scale of maps 1 inch to 2 miles. 74-B.

- (1938b): *Cree Lake area, Saskatchewan*, Geol. Survey Canada, Paper 38-9, 13 pages, 2 geol. maps.

Mainly discussion of rock types and structures mapped. No economic mineral deposits are reported from this area. Scale of maps 1 inch to 2 miles. 74-C.

- (1939): *The Pleistocene geology of the Cree Lake region, Saskatchewan*, Royal Soc. Canada, Trans., 3d ser., vol. 33, sec. 4, p. 101-109, 3 plates, physiographic map.

This paper is based on ground examination supplemented by study of aerial photographs, some of which are used to illustrate the features described. 74-B,F,G.

- (1941): *Weitzel Lake, northern Saskatchewan*, Geol. Survey Canada, Map No. 576A, with descriptive notes.

Final map previously published in preliminary form (SPROULE, 1938b) under different title. Scale 1 inch to 4 miles. 74-G (East half).

- (1951): *The McMurray formation in its relation to oil occurrence*, Oil in Canada, vol. 4, No. 3, November 19, p. 4651-4665, 6 figs.

This paper gives some information on the Athabaska series in Sask. as the writer advances the thesis that this series was the source of the sands of the McMurray formation. 74

SPROULE, J. C. and DOWNIE, D. L.

- (1941a): *Brustad River, northern Saskatchewan*, Geol. Survey Canada, Map No. 577A, with descriptive notes.

Final map previously published in preliminary form (SPROULE, 1938b) under different title. Scale 1 inch to 4 miles. 74-G (West half).

- (1941b): *Porter Lake, northern Saskatchewan*, Geol. Survey Canada, Map No. 580A, with descriptive notes.

Final map previously published in preliminary form (SPROULE, 1938a) under the title Mudjatik, West half. For adjoining map see ALCOCK et al. (1941). Scale 1 inch to 4 miles. 74-B (West half).

SPROULE, J. C. et al.

- (1941): *Upper Clearwater River, northern Saskatchewan*, Geol. Survey Canada, Map No. 578A.

No accompanying publication. Map provided with marginal descriptive notes. Scale 1 inch to 4 miles. 74-F (East half).

**STANSFIELD, EDGAR and NICOLLS, J. H. H.**

- (1918): *Analyses of Canadian Fuels. Part III: Manitoba and Saskatchewan*, Mines Branch, Dept. of Mines Canada, Rept. No. 481, 15 pages.

Analyses of coal from the Estevan, Willowbunch and Wood Mountain areas and of oil shale from boring at Hanley. 62-E-2; 72-G-7,8, 72-H-5; 72-O-9.

**STANSFIELD, JOHN**

- (1918): *Surface deposits of southeastern Saskatchewan*, Geol. Survey Canada, Summary Rept. 1917, pt. C, p. 41-52, soil map.

Deals primarily with the groundwater resources of the area. Also discussed are the Pleistocene deposits and the soil types 62-E,L; 72-1,J.

- (1919): *Surface deposits of southeastern Saskatchewan*, Geol. Survey Canada, Summary Rept. 1918, pt. C, p. 42-48.

Continuation of previous fieldwork described in STANSFIELD (1918). 62-E,L; 72-1,J.

- (1922): *Banded precipitates of vivianite in a Saskatchewan fire clay*, Geol. Mag., vol. 59, No. 8, p. 356-358, 1 plate.

Samples collected near Claybanks. The banding is due to rhythmic precipitation of vivianite. Description and figures of samples 72-1-3.

**STERNBERG, C. M.**

- (1924): *Notes on the Lance formation of southern Saskatchewan*, Can. Field-Naturalist, vol. 38, p. 66-70.

Reviews literature on the uppermost Upper Cretaceous strata in Wood Mountain and Cypress Hills. Account of fieldwork done south of Wood Mountain includes measured section, faunal and floral lists. These lists are completed, with the mentioning of previously collected fossils from the Ravenscrag. 72-F-10,11; 72-G-1,2.

- (1926): *A new species of Thespesius from the Lance formation of Saskatchewan*, Geol. Survey Canada, National Museum Bull. No. 44, Geol. Ser. 46, (Contributions to Canadian Paleontology), p. 73-84, 1 fig., 3 plates.

Full description of the fossils collected from near Wood Mountain including photographs of the specimen. 72-G-2.

- (1930): *Miocene gravels in southern Saskatchewan*, Royal Soc. Canada, Trans., 3d ser., vol. 24, sec. 4, p. 29-30.

Discusses the Wood Mountain gravels and the fragmentary vertebrate fossils collected from them. A faunal list is given but no description of the species 72-G-8.

- (1932): *A new fossil crocodile from Saskatchewan*, Can. Field-Naturalist, vol. 46, p. 128-133, 2 plates.

Full description of *Leidyosuchus aculeolatus* n. sp. collected from the Paleocene beds of southern Sask. No stratigraphical discussion. 72-H-5.

**STOCKWELL, C. H.**

- (1929): *Reindeer Lake area, Saskatchewan and Manitoba*, Geol. Survey Canada, Summary Rept. 1928, pt. B, p. 46-72, 1 plate, geol. map (G.S.C. Map No. 233A).

Mapping done on scale one inch equals six miles. Report fully describes rock types mapped. Structure is treated briefly. Economic mineral deposits in the area are discussed. 64-B,D; 64-E-1.

- (1944): *The Flin-Flon-Sheridan-Herb Lake mineral area, Manitoba and Saskatchewan*, Precambrian, vol. 17, No. 8, p. 4-7, and p. 13, 1 fig.

Main emphasis is on the discussion of structural control of the deposits and the mineralization in order to provide prospectors with data of importance in the search for new deposits in this area. 63-K-12,13, 63-L-9,16.

- (1946): *Flin Flon-Mandy area, Manitoba and Saskatchewan*, Geol. Survey Canada, Paper 46-14, 5 pages, 2 geol. maps.

Area mapped in detail on scale 1 inch equals 800 feet. Accompanying notes give short description of rock types, structures and economic mineral deposits. 63-K-12,13.

**SWAIN, EDGAR**

- (1944): *Gas and oil development in Saskatchewan, 1944*, Precambrian, vol. 17, No. 7, p. 12-13, 1 fig.

Reviews exploration activities from 1934-1944. The developments in the Lloydminster, Kamsack and Vera areas are discussed separately. Sed. Sask.

TANTON, T. L.

- (1940): *Post-Missi intrusives on Torrington Island, Amisk Lake, Saskatchewan*, Royal Soc. Canada, Trans., 3d ser., vol. 34, sec. 4, p. 135-142, 2 plates, 2 figs.

Detailed study of the nature of the intrusive contact between Missi conglomerate and granite. This study shows the granite to be post-Missi in age. 63-L-9.

- (1941a): *Flin Flon, Saskatchewan, and Manitoba*, Geol. Survey Canada, Map No. 632A.

No accompanying publication, but map provided with descriptive notes. Scale 1 inch to 1 mile. 63-K-13.

- (1941b): *Schist Lake, Saskatchewan-Manitoba*, Geol. Survey Canada, Map No. 633A.

No accompanying publication, but map provided with descriptive notes. Scale 1 inch to 1 mile. 63-K-12.

- (1944): *Scheelite occurrences in Saskatchewan*, Prov. of Sask., Dept. of Nat. Res., Annual Rept. 1943, p. 43-44.

Summarizes the scheelite occurrences in the Amisk Lake-Flin Flon area. The geology is not discussed. 63-K-12, 63-L-9.

TANTON, T. L. and HARRISON, J. M.

- (1950): *The Flin Flon and Sherritt Gordon mines*, in: DUNHAM, K. C., et al. *The geology, paragenesis, and reserves of the ores of lead and zinc*, 18th Internat. Geol. Cong., London, p. 47-50, 2 figs.

Brief mention of the more important geological features of surface and ore in the Flin Flon area. 63-K-13.

TOMKINS, R. V.

- (1948): *Natural sodium sulphate in Saskatchewan*, Prov. of Sask., Dept. of Nat. Res., Technical and Economic Series, Rept. 1, 98 pages, 4 plates, 10 figs., 10 maps.

Report deals mainly with the history, market conditions, economics and technology of sodium sulphate production. The occurrences in Sask. are dealt with in a separate chapter which is the main and most up to date reference to this particular aspect. The chemical composition of the salt is given and an index location map provided. Sed. Sask.

TYRRELL, J. B.

- (1887): *Report on a part of northern Alberta, and portions of adjacent districts of Assiniboia and Saskatchewan, embracing the country lying south of the North Saskatchewan River and north of lat. 51°6', between long. 110° and 115°15' west*, Geol. Survey Canada, Annual Rept., (New ser.), vol. II, 1886, Rept. F, 176 pages, 2 plates, 2 figs., geol. map.

The report deals exclusively with what is now the province of Alberta, but the geologic map shows a small strip of Sask. along the Fourth Principal meridian (Long. 100°). 72; 73.

- (1889): *Notes to accompany a preliminary map of the Duck and Riding Mountains in northwestern Manitoba*, Geol. Survey Canada, Annual Rept. (New ser.), vol. III, 1887-1888, Rept. E, 16 pages, 1 plate, geol. map.

Reconnaissance survey dealing mainly with Manitoba. Mentions briefly Lake Assiniboine closely associated with glacial Lake Agassiz. 62-M-N.

- (1890): *Post-Tertiary deposits of Manitoba and adjoining territories of northwestern Canada*, Geol. Society Am., Bull., vol. 1, p. 395-410.

The article deals with the glacial and interglacial deposits of the western plains. Few specific localities are mentioned. Major reference to the general glacial features and the physiography of the plains. Sed. Sask.

- (1892): *Report on Northwestern Manitoba, with portions of the adjacent districts of Assiniboia and Saskatchewan*, Geol. Survey Canada, Annual Rept., (New ser.), vol. V, part 1, 1890-1891, Rept. E, 235 pages, 7 plates, 2 figs., geol. map, forest distribution map.

Deals mainly with Manitoba outcrops. Those in Saskatchewan are along the present Manitoba boundary and all in the Cretaceous. 62-L-13; 62-M-4,5,12,13; 63-D-4,5,12,13.

- (1893): *Pleistocene phenomena in the region southeast and east of Lake Athabaska, Canada*, Abstract in: *Am. Geologist*, vol. II, p. 132-133, and p. 175.

Brief mention of glacial features such as striations, eskers, drumlins (Cree Lake and vicinity), and kames. Terraces were recorded about a hundred feet above Black Lake. A great moraine forms the watershed between the Saskatchewan and Churchill Rivers. 74.

- (1897): *Report on the Doobaaunt, Kazan, and Ferguson rivers, and the northwest coast of Hudson Bay; and on two over-land routes from Hudson Bay to Lake Winnipeg*, *Geol. Survey Canada, Annual Rept.*, (New ser.), vol. IX, 1896, Rept. F, 218 pages, 12 plates, geol. map.

The part dealing with Sask. describes a canoe trip along the eastern boundary of the province from The Pas to Reindeer Lake. Reconnaissance survey dealing briefly with physiography, rock types etc. along the rivers (map of 63-E,K,L,M; 64-D,E).

- (1902): *Report on explorations in the north-eastern portion of the district of Saskatchewan and adjacent parts of the district of Keewatin*, *Geol. Survey Canada, Annual Rept.* (New ser.), vol. XIII, 1900, Rept. F, 48 pages, 1 plate, geol. map (same as DOWLING, 1902, G.S.C. Map No. 766s).

Reconnaissance survey covering part of east-central Sask. The paleozoic section around Cumberland House is briefly described and some fossil lists provided. See also DOWLING (1902) Map on scale 1 inch to 8 miles 63-E-16, 63-F-13, 63-K-4,5.

- (1915): *Precambrian goldfields of central Canada*, *Royal Soc. Canada, Trans.*, 3d ser., vol. 9, sec. 4, p. 89-118, 1 fig., 2 plates.

In this general discussion mention is made of specific gold occurrences which includes the Beaver (Amisk) Lake gold deposits in Sask. The geology is briefly described. 63-L-9.

## TYRRELL, J. B. and DOWLING, D. B.

- (1896): *Report on the country between Athabaska Lake and Churchill river, with notes on two routes travelled between the Churchill and Saskatchewan rivers*, *Geol. Survey Canada, Annual Rept.*, (New ser.), vol. VIII, 1895, Rept. D, 120 pages, geol. map.

Reconnaissance survey covering most of Precambrian Sask. The routes travelled are described as to physiography, rock types, etc. A summary view of the physiography and stratigraphy precedes these local descriptions. Map on scale 1 inch to 25 miles. 64, 73-N,O,P, 74.

## UPHAM, WARREN

- (1890): *Exploration of the glacial lake Agassiz in Manitoba*, *Geol. Survey Canada, Annual Rept.*, (New ser.), vol. IV, 1888-1889, Rept. E, 156 pages, 3 plates.

Comprehensive study of Lake Agassiz which covered most of southern Manitoba but extended into Sask. along the Sask. River (Lake Sask.) and along the Qu'Appelle River (Lake Souris). Sed. Sask.

- (1895): *The glacial Lake Agassiz*, *U.S. Geol. Survey, Mon.* 25, 658 pages, 38 plates, 35 figs.

Classical and most extensive study of Lake Agassiz, parts of which extended into Sask. Lake Souris and Lake Saskatchewan are fully described as well as glacial lakes of the Athabaska basin. For criticism see JOHNSTON (1916). Sask.

## WALLACE R. C.

- (1916): *Sulphide deposits at Flin Flon and Schist Lakes, Manitoba*, *Can. Mining Jour.*, vol. 37, p. 468-469.

A brief general description of the ore bodies in the Flin Flon district. 63-K-13.

- (1921a): *The Flin Flon ore body*, *Can. Inst. Mining and Metal., Trans.*, vol. 24, p. 99-111, 6 figs.

Main emphasis on the shape, extent and mineralogical composition of the ore body and the development work being done in the district. The surface geology is only briefly discussed. 63-K-13.

- (1921b): *The search for oil in the Pasquia Hills*, *Can. Mining Jour.*, vol. 42, p. 540-542.

The stratigraphy of the Cretaceous beds of this area is discussed and several sections measured by the writer are presented. The economic possibilities of the oil shales are considered. 63-E.

WALLACE, R. C. and DeLURY, J. S.

- (1916): *The mineral belt north of the Pas, northwestern Manitoba and eastern Saskatchewan*, Can. Mining Inst., Bull., No. 54, p. 884-890.

General account of the Flin Flon region and east. The paper is a condensation of a report made for the Manitoba Public Utilities Commission. It treats such subjects as access, ore deposits and prospecting in a summarical way. 63-K-12.

WALLACE, R. C. and McCARTNEY, G. C.

- (1928): *Heavy minerals in sand horizons in Manitoba and eastern Saskatchewan*, Royal Soc. Canada, Trans., 3d ser., vol. 22, sec. 4, p. 199-214, 8 figs.

Samples from Sask were collected at Wapawekka Lake (Dakota sandstone) and near Estevan (Tertiary). A mineralogical description of the sands is presented. 62-E-2, 73-1-15, 16

WARREN, P. S.

- (1927): *Geology and oil prospects in the vicinity of Riverhurst, Saskatchewan*, Geol. Survey Canada, Summary Rept. 1926, pt. B, p. 39-42.

Brief description of Cretaceous stratigraphy is followed by discussion of the gas discovery in the Belly River formation 72-J-15.

- (1930): *Oil and gas prospects in central Saskatchewan*, Geol. Survey Canada, Summary Rept. 1929, pt. B, p. 40-47.

Discussion of the Cretaceous stratigraphy is followed by a chapter on structure as determined by using Belly River beds as a marker. The wells drilled in the area are mentioned, but no complete logs given 62; 72; 72-I-13, 72-N-9, 72-O-9, 15; 72-P-6

- (1934): *Paleontology of the Bearpaw formation*, Royal Soc. Canada, Trans., 3d ser., vol. 28, sec. 4, p. 81-100, 3 plates.

Fossils collected from the Bearpaw in southern Sask. are described and figured. A major reference to the Paleontology of the Bearpaw formation. No emphasis is placed on the stratigraphical division of this formation 72.

- (1935): *The fauna of the Lea Park shale*, Royal Can. Inst., Trans., vol. 20, pt. 2, p. 223-229.

General account of the geological occurrence of the Lea Park formation. faunal lists of fossils obtained from various localities in Alberta and Sask. correlation with other formations. Specific Sask. occurrences are not mentioned. Sed Sask

- (1937): *A Rhynchonellid brachiopod from the Bearpaw formation of Saskatchewan*, Royal Soc. Canada, Trans., 3d ser., vol. 31, sec. 4, p. 1-4, 1 plate.

The brachiopods collected near Riverhurst are here named. *Hesperorhynchia superba*. Full description and figures 72-O-15

WEBB, J. B.

- (1951): *Geological history of plains of western Canada*, Am. Assoc. Petrol. Geol. Bull., vol. 35, p. 2291-2315, 11 figs.

A generalized stratigraphic correlation chart of the western Canada basin is presented. All systems present are considered separately as to distribution and stratigraphic relations, lithology and isopachs (illustrated) and tectonic history. An important paper presenting the over-all view on the stratigraphy of the plains area. Sed Sask

WEEKS, L. J.

- (1940a): *Reindeer Lake, Northern Saskatchewan*, Geol. Survey Canada, Map No. 595A, with descriptive notes.

Final map previously presented in preliminary form. (Paper 39-8). Brief description of rock types mapped. No discussion of structures. Main reconnaissance survey of this area. Scale 1 inch to 4 miles 64-E (East half). For west half see WEEKS (1940b)

- (1940b): *Spalding Lake, Northern Saskatchewan*, Geol. Survey Canada, Map No. 596A, with descriptive notes.

Final map previously presented in preliminary form. (Paper 39-8). Brief description of rock types mapped. No discussion of structures. Main reconnaissance survey of this area. Scale 1 inch to 4 miles 64-E (West half). For east half see WEEKS (1940a).

WEEKS, L. J. et al.

- (1948): *Studies of some Canadian topographic maps*. Geol. Survey Canada, Paper 48-24, 38 pages.

A total of 29 topographic maps, two of which (Medicine Hat-Maple Creek and Moose Jaw) cover part of southern Sask., is discussed as to prominent physiographic features. On the Sask. maps are mentioned nunataks plateau region, radial drainage pattern, consequent streams, lake plain, terraces, knob and kettle topography, pre-glacial highland "alkali" lakes, drainage outlet channel 72-II (North half), 1 (South half) 72-K,F.

WESTON, T. C.

- (1895): *Notes on the Miocene Tertiary rocks of the Cypress Hills, North West Territory of Canada*, Nova Scotian Institute of Sci., Proc. and Trans., vol. 8 (being vol. 1 of the second series), p. 223-227, 1 fig.

The rocks described are now considered to be of Oligocene age. A stratigraphic section of the strata at the head waters of Swift Current Creek is presented 72-F,10.

- (1899): *Notes on a geological trip over a portion of the Canadian Northwest Territories*, Ottawa Naturalist, vol. 13, p. 177-187.

Popular account of a canoe trip down the South Saskatchewan river. The writer briefly describes the Cretaceous fossils collected opposite the mouth of the Swift Current Creek (*Homotrypa*, *Liopistha* etc.). 72-J-12.

WHITEAVES, J. F.

- (1885): *Report on the invertebrata of the Laramie and Cretaceous rocks, of the vicinity of the Bow and Belly rivers and adjacent localities in the North-West Territory*, Geol. Survey Canada, Contributions to Canadian Paleontology, vol. 1, pt. 1, 89 pages, 51 figs.

Lists fossils collected from the Souris Valley with synonymy. Few specimens figured. Also Cretaceous fossils mentioned from various localities in southwestern Sask. 62-E-2, 72.

- (1889): *On some Cretaceous fossils from British Columbia, the North West Territory and Manitoba*, Geol. Survey Canada, Contributions to Canadian Paleontology, vol. 1, pt. 4, p. 151-196, 54 figs.

Mentions a few invertebrate fossils from the Duck Mountain district 62-N.

- (1897a): *The fossils of the Galena-Trenton and Black River formations of Lake Winnipeg and its vicinity*, Geol. Survey Canada, Paleozoic Fossils, vol. 3, pt. 3, p. 129-242, 22 plates.

*Receptaculites orenti* and *Martinites mantobensis* are the only fossils mentioned from Sask. Collected from the Ordovician of Namew Lake. Description and figures 63-K-4.

- (1897b): *On some remains of a Sepia-like cuttle-fish from the Cretaceous rocks of the South Saskatchewan*, Can. Record of Sci., vol. 7, p. 459-461, 1 fig.

First description and figure of *Actinosepia Canadensis* a new genus and species of Sepiidae collected from the Bearpaw formation as exposed along the South Saskatchewan River opposite the mouth of Swift Current Creek 72-J-12.

- (1906): *The fossils of the Silurian (Upper Silurian) rocks of Keewatin, Manitoba, the northeastern shore of Lake Winnipegosis, and the lower Saskatchewan river*, Geol. Survey Canada, Paleozoic Fossils, vol. 3, pt. 4, p. 243-298, 17 plates.

Mentions the occurrence of *Pentamerus Aylesfordii* (probably synonymous with *Vingina decussata*) in the Silurian strata near Cumberland House. No other fossils from Sask. recorded 63-E-16.

WICKENDEN, R. T. D.

- (1931a): *An area of little or no drift in southern Saskatchewan*, Royal Soc. Canada, Trans., 3d ser., vol. 25, sec. 4, p. 45-47.

The area covers about 300 square miles and lies in the southeast part of Wood Mountain. Its extent is described and evidence given for the supposed absence of glaciation. 72-G,H.

- (1931b): *Interglacial deposits in Southern Saskatchewan*, Geol. Survey Canada, Summary Rept. 1930, pt. B, p. 65-71, 2 figs.

Main reference to these deposits. Individual occurrences are described and sections given. The age and extent of the deposits is discussed 72-H J.



- (1932a): *New species of Foraminifera from the Upper Cretaceous of the Prairie Provinces*, Royal Soc. Canada, Trans., 3d ser., vol. 26, sec. 4, p. 85-92, 1 plate.

Most of the species described and figured were collected outside Sask. Some, however, were also found in well samples from Sask. Sed. Sask.

- (1932b): *Notes on some deep wells in Saskatchewan*, Royal Soc. Canada, Trans., 3d ser., vol. 26, sec. 4, p. 177-196, 2 figs.

Important discussion of the Mesozoic and Cenozoic stratigraphy of Sask. using data from 5 wells, of which complete logs are given Sed. Sask., 72-F-4, 72-1-5; 72-J-6, 72-P-6, 73-C-6

- (1933): *Jurassic Foraminifera from wells in Alberta and Saskatchewan*, Royal Soc. Canada, Trans., 3d ser., vol. 27, sec. 4, p. 157-170, 2 plates.

Describes and illustrates Jurassic foraminifera from the Imperial Boundary no 1 and the Moose Jaw wells 72-F-4, 72-1-5

- (1935): *Some possible sources of ground water in southern Saskatchewan*, Engineering Jour., vol. 18, p. 193-195, 1 fig.

General description of the geological aspects of southern Sask. in connection with the search for bedrock waters as well as glacial drift waters. 62, 72.

- (1937): *Age relations of glacial deposits in southeastern Alberta and southwestern Saskatchewan*, Abstract in: Royal Soc. Canada, Proc., 3d ser., vol. 31, Appendix B, sec. 4, p. cxliii.

Geographical outline given of a moraine marking the limit of a major glacial advance in the Pleistocene 72

- (1941): *Cretaceous marine formations penetrated in wells near Lloydminster, Saskatchewan*, Royal Can. Inst., Trans., vol. 23, pt. 2, p. 147-155.

Discussion of the stratigraphy of the area giving the log of Lloydminster No. 3 as an example. Correlations are based on lithology and a study of the micro-fauna. The occurrence of oil and gas is not discussed 73-F-4, 5

- (1945a): *Kindersley, Saskatchewan*, Geol. Survey Canada Paper 45-3, preliminary geol. map with descriptive notes.

Short description of the Cretaceous stratigraphy of the area from well records and a few outcrops. Scale of map 1 inch to 4 miles 72-N (West half).

- (1945b): *Mesozoic stratigraphy of the eastern plains, Manitoba and Saskatchewan*, Geol. Survey Canada, Mem. 239, 87 pages, 5 plates, 2 figs., 3 geol. maps (G.S.C. Map No. 637A, 638A, 713A).

Report deals with southern Sask. east of second meridian. Main reference to this area. Comprehensive discussion of stratigraphy with many measured sections, most of which are in adjacent Manitoba. Well logs of older wells in this area given. One map (713A) on scale 1 inch to 8 miles. The other maps on scale 1 inch to 4 miles 62-F-3, 4, 5, 6, 11, 12, 13, 14, 62-K-3, 4, 5, 12, 13, 62-N-4, 5, 12, 13, 63-C-4, 5, 12, 13; 63-D-1, 2, 7, 8, 9, 10, 15, 16.

- (1948a): *Eosponidella, a new genus from the Upper Cretaceous*, Royal Soc. Canada, Trans., 3d ser., v. 42, sec. 4, p. 81-82, 1 fig.

These foraminifera, which were obtained from wells in southwestern Sask., are fully described and figured. 72-K-14

- (1948b): *The Lower Cretaceous of the Lloydminster oil and gas area, Alberta and Saskatchewan*, Geol. Survey Canada, Paper 48-21, 15 pages, structure contour map, 1 fig. (section).

Important stratigraphic reference to this area. Contour map on top of Manville formation. Sections show lithology and electric logs. 73-F-4, 5

- (1951): *Lower Cretaceous stratigraphy*, Oil in Canada, vol. 3, No. 60, October 15, p. 4439.

General discussion of the Lower Cretaceous strata of the prairie provinces. The Unity sand is correlated with the Clearwater formation. Sed. Sask., 73-C.

## WICKENDEN, R. T. D. and GRAHAM, R.

- (1937): *Arconlea-Blackfoot area, southern Saskatchewan*, Geol. Survey Canada, Paper 37-26, 13 pages, geol. map and sections.

Treats mainly the Cretaceous stratigraphy of beds outcropping in the area. Data from two wells are used in the interpretation of the structure. Map on scale 1 inch to  $\frac{1}{2}$  mile 72-H-15, 72-1-2

**WILLIAMS, A. J.**

- (1947): *Report of the industrial development branch, Prov. of Sask., Dept. of Nat. Res., Annual Rept. 1948*, p. 126-134, 4 figures.

Summarizes all Sask. potash occurrences giving wells and depth at which the potash was encountered. Chemical analyses of samples from these wells given. Sed. Sask.; 73-C-6,11.

- (1948): *Report of the industrial development branch, Prov. of Sask., Dept. of Nat. Res., Annual Rept. 1948*, p. 133-148, 3 figs.

Contains some additional information about potash occurrences around Unity. 73-C-6,11

- (1949): *Report of the industrial development branch, Prov. of Sask., Dept. of Nat. Res., Annual Rept. 1950*, p. 161-166, 3 figs.

Reports potash encountered in the community Services Battleford No. 1 well. Cores taken and analyses of these given. 73-C-9

**WILLIAMS, M. Y.**

- (1929): *The physiography of the southwestern plains of Canada*, Royal Soc. Canada, Trans., 3d ser., vol. 23, sec. 4, p. 61-79.

The physiographic development of the area is presented as well as the description of individual features. Main reference to the physiographic history of southwestern Sask. including the Cypress Hills. 72-F.

- (1932): *The geological history of the southwestern plains of Canada*, Jour. Geol. vol. 40, p. 560-575.

The article is of a general nature with emphasis on the Cretaceous history of the district. No subsurface data are given. A correlation table is presented in which is included the stratigraphic section of southwestern Sask. 72-F.

**WILLIAMS, M. Y. and DYER, W. S.**

- (1930): *Geology of southern Alberta and southwestern Saskatchewan*, Geol. Survey Canada, Mem. 163, 160 pages, 5 plates, 4 figs.

A major reference to stratigraphy of southwestern Sask. Extensive description of formations, including comprehensive faunal lists. For map of this area see WILLIAMS et al (1928) 62-E-2, 62-E-F; 72-F,G,H, 72-J-5.

**WILLIAMS, M. Y. et al.**

- (1928): *Calgary sheet*, Geol. Survey Canada, Map 204A, and sections.

This map was published in advance of the publication covering the map area (WILLIAMS and DYER, 1930). No descriptive notes on the map. Map and section on scale 1 inch to 8 miles. 72-F (West half); 72-K (West half), 72-N (West half).

**WILSON, W. J.**

- (1912): *Palaeobotany*, Geol. Survey Canada, Summary Report 1911, p. 358-359.

Lists plant fossils from the Tertiary beds exposed in the Dirt Hills. No descriptions and no illustrations given. 72-H-14.

**WOOD, H. E. 2nd et al.**

- (1941): *Nomenclature and correlation of the North American continental Tertiary*, Geol. Soc. Am., Bull., vol. 52, p. 1-48, 1 plate.

The chart shows the correlation of Sask. strata with adjacent and distant areas of this continent. 62, 72

**WORCESTER, W. G.**

- (1929): *Saskatchewan clays of Dominion importance*, Can. Inst. Mining and Metal., Trans., vol. 32, p. 255-269, 4 figs.

Main emphasis is on the technology of the clays of the Whitemud as mined near Claybank, Sask. General geology is briefly discussed. 72-13,4.

- (1935): *Saskatchewan industrial minerals*, Can. Inst. Mining and Metal., Bull. 277, p. 239-250, 6 figs.

Popular summary account of the non-metallic mineral deposits of southern Sask. Discussed are coal, clay, sodium sulphate, volcanic ash, etc. Sed. Sask.; 72-C-1; 72-H-5, 72-J-3,8; 72-F-5; 73-C-5.

- (1937a): *Clays and bentonites*, Prov. of Sask., Dept. of Nat. Res., Annual Rept. 1937, p. 39-40.

Brief description of fieldwork on clay and bentonite in the southern part of Sask. along international border near and in Cypress Hills 72-F-1 7,10, 72-G-4.

- (1937b): *Saskatchewan bentonites*, Can. Inst. Mining and Metal. Trans., vol. 40 p. 438-451, 12 figs.

Main reference to Sask. bentonites. Emphasis is on the properties of the bentonite and its industrial uses. The stratigraphical position and origin are discussed. 62; 72.

- (1938): *Clays and bentonites*, Prov. of Sask., Dept. of Nat. Res., Annual Rept. 1938, Part II, p. 18-21.

Brief discussion of fieldwork carried out in 12 separate areas in southern Sask., south of Swift Current and Moose Jaw. Mainly search for bentonite 72-G,H,I.

- (1943a): *Saskatchewan quartzite pebble deposits*, Prov. of Sask., Dept. of Nat. Res., Annual Rept. 1942, p. 51-55, 1 plate.

Preliminary study on the occurrence of quartzite pebbles suitable for ball mill pebbles. Deposits described in three areas: Swift Current, Eastend, Cadillac, all in southwestern Sask. 72-F-10, 72-G-13; 72-J-1.

- (1943b): *Silica sand deposits on the Red Deer River*, Prov. of Sask., Dept. of Nat. Res., Annual Rept. 1942, p. 56-66, 4 plates.

Mainly technical information on properties of the sands. Geological occurrence of the sands is illustrated in two sections 63-C-13.

- (1944): *Saskatchewan quartzite pebble deposits*, Prov. of Sask., Dept. of Nat. Res., Annual Rept. 1943, p. 45-48.

Investigated were deposits occurring south of Swift Current, Maple Creek and in the Cypress Hills. Few remarks about their geological occurrence 72-F-10,14; 72-G-13; 72-J-4.

- (1950): *Clay resources of Saskatchewan*, Prov. of Sask., Dept. of Nat. Res., Technical & Economic Series, Rept. 2, 198 pages, 3 figs., 16 plates, 4 maps.

Main reference on clay in Sask. Compiles information previously presented in many different reports by the author. The report stresses the technology of clays and its properties. The general geology is presented and the distribution of clay deposits is shown on a map. Sed. Sask.

## WRIGHT, J. F.

- (1928): *Kisissing Lake area, Manitoba*, Geol. Survey Canada, Summary Rept. 1928, pt. B, p. 73-104, geol. map. (G.S.C. Map No. 234A).

Paper discusses the general geology of this area in Manitoba but the geologic map shows a small strip of Sask. in which granite and Kisseynew gneisses were mapped. Map on scale 1 inch to 2 miles 63-N-4.5.

- (1933): *Amisk Lake area, Saskatchewan*, Geol. Survey Canada, Summary Rept. 1932, pt. C, p. 73-110, 5 figs.

Main reference to this area, containing descriptions of all mineral properties. Diagrammatic structure sections are presented and all rock types fully described. For west half see WRIGHT and STOCKWELL (1934) 63-L-9,16.

- (1934): *The Pas sheet*, Geol. Survey Canada, Map No. 268A.

No accompanying publication but map provided with marginal descriptive notes. Scale 1 inch to 8 miles. 63-C,D,E,F,L,K.

- (1935): *General geological features of the mining fields of Manitoba and adjoining districts*, Can. Inst. Mining and Metal. Trans., vol. 38, p. 255-260.

General discussion of the geology of the Precambrian shield, mainly in Manitoba with occasional reference to the conditions around Flin Flon 63-K-13.

## WRIGHT, J. F. and STOCKWELL, C. H.

- (1934a): *Gold occurrences of Flin Flon district, Manitoba and Saskatchewan*, Geol. Survey Canada, Summary Rept. 1933, pt. C, p. 1-11.

Describes a few gold prospects of the area. No general account of the geological features of the area is given. 63-K-12,13.

—(1934b): *West half of Amisk Lake area, Saskatchewan*, Geol. Survey Canada, Summary Rept. 1933, pt. C, p. 12-22.

Main reference to this area. See also WRIGHT (1933) for east half. Emphasis on description of rock types mapped. No economic mineral deposits are reported 63-L-10,15.

—(1935): *Amisk Lake, Saskatchewan*, Geol. Survey Canada, Map No. 314A.

Map covers the area previously described by WRIGHT (1933) and WRIGHT and STOCKWELL (1934). On the map are descriptive marginal notes. Scale 1 inch to 2 miles 63-L-9,10,15,16.

#### ZWICK, B. F.

(1949): *Development of the oil and gas industry in Western Canada*, Mines Mag., vol. 39, p. 55-61, 5 figs.

Brief mention of the development of the Lloydminster area 73-F-4.5.

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62-E-2 . . . . . (Johnston, R. A. A., 1915)

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- Prec. Sask. . . . . (Anonymous, 1947b)  
 63-K-12,13 . . . . . (Alcock, 1923)  
 63-K-13 . . . . . (Alcock, 1930); (Alcock, 1935a); (Brownell and Kinkel, 1935);  
 . . . . . (Browning, 1927); (Bruce, 1916); (Bruce, 1924);  
 . . . . . (Callinan, 1917); (Geol. Survey Canada, 1947c);  
 . . . . . (Koffman et al, 1948); (McClelland, 1951); (Stockwell, 1944);  
 . . . . . (Stockwell, 1946); (Wallace, 1921a)  
 63-L(NW Cor.) . . . . . (Bruce, 1918)  
 63-M-11 . . . . . (Satterly, 1932)  
 64-D-4,5 . . . . . (Byers, 1945)  
 64-E-1 . . . . . (Alcock, 1930); (Stockwell, 1929); (Weeks, 1940a)  
 73-P-3 . . . . . (Mawdsley, 1934b)  
 73-T-7 . . . . . (Keith, 1941); (McInnes, 1913)  
 74-A-7 . . . . . (McMurchy, 1938a); (Mawdsley, 1946); (O'Neill and  
 . . . . . Gunning, 1934); (Ross, 1938)  
 74-N . . . . . (Bruce, 1924)  
 74-N-7,8,9,10 . . . . . (Robinson, S. C., 1950)  
 74-N-8 . . . . . (Jolliffe, 1946)  
 74-N-11 . . . . . (Alcock, 1926a)  
 74-O-7 . . . . . (Alcock, 1936a); (Camsell, 1916a)  
 74-O-12 . . . . . (Alcock, 1936a); (Cooke, 1937a)  
 74-P . . . . . (Furnival, 1940)  
 74-P-5 . . . . . (Alcock, 1936a)

#### GARNET:

- 74-P-5 . . . . . (Johnston, R. A. A., 1915)

## GLASS SAND:

Sed. Sask.	(Anonymous, 1947b)
63-C-13	(Worcester, 1943b)
63-D-13	(Wickenden, 1945b)
72-H-12	(Cole, 1928)
72-K	(Cole, 1928)
73-I-9,10,15,16	(DeLury, 1926)
73-I-15,16	(McInnes, 1910)
73-I-16	(Cole, 1928); (McInnes, 1913)

## GOLD:

Préc. Sask.	(Anonymous, 1947b)
63-K-5,12,13	(Bruce, 1914)
63-K-12,13	(Alcock, 1923); (Wright and Stockwell, 1934a)
63-K-13	(Alcock, 1930); (Brownell and Kinkel, 1935); (Koffman et al, 1948); (McClelland, 1951); (Stockwell, 1944); (Stockwell, 1946); (Wallace, 1921a)
63-L(NW Cor.)	(Bruce, 1918)
63-L-8,9,16	(Bruce, 1914)
63-L-9,	(Bruce, 1915a); (Bruce, 1915b); (Bruce, 1916); (Bruce, 1924); (Mawdsley, 1934b); (Tyrrell, 1915)
63-L-9,16	(Wright, 1933)
64-D	(Alcock, 1938)
64-D-4,5	(Byers, 1949)
73-F-12	(Edmunds, 1939a)
73-P-3	(Mawdsley, 1934b)
73-P-6,7.	(Mawdsley, 1940)
73-P-7.	(Keith, 1941)
73-P-8	(Satterly, 1932)
74-A-1	(Miller, M. L., 1949)
74-A-7	(McMurchy, 1938a); (Mawdsley, 1946); (O'Neill and Gunning, 1934); (Ross, 1938)
74-B	(Sproule, 1938a)
74-N	(Alcock, 1936a)
74-N-7	(Jewitt and Gray, 1940)
74-N-7,8,9,10	(Cooke, 1937a); (Robinson, S. C., 1950)
74-N-8	(Alcock, 1936b); (Cooke, 1946); (Jolliffe, 1946)
74-N-8,9	(Geol. Survey of Canada, 1947)
74-N-9	(Cameron, 1935)
74-O-7	(Camsell, 1916a)
74-O-7,8	(Mawdsley, 1949)
74-P	(Furnival, 1940)

## GRAPHITE:

74-N	(Alcock, 1915)
74-O-6,7,8	(Alcock, 1936a)
74-P	(Furnival, 1940)

## GRAVEL: (See Sand and Gravel)

## HEMATITE:

74-N-10	(Johnston, R. A. A., 1915)
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## IRON:

74-N	(Alcock, 1915); (Bruce, 1924)
74-N-7,8,9,10	(Alcock, 1917); (Robinson, S. C., 1950)
74-N-8	(Alcock, 1936a); (Allan and Cameron, 1923); (Jolliffe, 1946)



**IRONSTONE:** (See Clay ironstone)

**LEAD:**

- Prec. Sask. . . . . (Anonymous, 1947b)  
63-K-13 . . . . . (Alcock, 1930); (Geol. Survey Canada, 1947c)  
63-L(NW Cor.) . . . . . (Bruce, 1918)  
64-D-4,5 . . . . . (Byers, 1949)  
64-E-1 . . . . . (Alcock, 1930); (Stockwell, 1929); (Weeks, 1940a)  
74-N-7 . . . . . (Jewitt and Gray, 1940)  
74-N-7,8,9,10 . . . . . (Robinson, S. C., 1950)  
74-N-8 . . . . . (Alcock, 1936a)

**LIMESTONE:** (See also Building stone)

- Sed. Sask. . . . . (Goudge, 1945)  
63-E,L . . . . . (Goudge, 1945)  
63-L . . . . . (McInnes, 1913)  
72-I-5 . . . . . (Goudge, 1945)  
72-P-11,13 . . . . . (Goudge, 1945)  
72-P-13 . . . . . (Goudge, 1930)  
73-A-12 . . . . . (Goudge, 1945)  
73-B-2 . . . . . (Goudge, 1945); (Parks, 1916)  
73-H-4 . . . . . (Parks, 1916)  
73-H-8 . . . . . (Goudge, 1930)

**LIMONITE:** (See also Clay ironstone, Ochre)

- 74-N-5 . . . . . (Johnston, R. A. A., 1915)

**MAGNESIUM SULPHATE:** (See also Sodium Sulphate)

- Sed. Sask. . . . . (Anonymous, 1947b)

**MANGANESE:**

- 72-F-12 . . . . . (Anonymous, 1947b)

**MARL:**

- 73-G-8 . . . . . (Anonymous, 1947b)

**MERCURY:**

- 74-N-7,8,9,10 . . . . . (Robinson, S. C., 1950)

**MINERAL RESOURCES:**

- Sask. . . . . (Anonymous, 1947b); (Geol. Survey Canada, 1947b)

**MINING AREAS:**

- Sask. . . . . (Geol. Survey Canada, 1947d)

**NATURAL GAS:** (See Oil and gas)

**NICKEL:**

- Prec. Sask. . . . . (Anonymous, 1947b)  
64-E-1 . . . . . (Stockwell, 1929)  
74-A-7 . . . . . (Mawdsley, 1946); (O'Neill and Gunning, 1934)  
74-N . . . . . (Alcock, 1915); (Bruce, 1924)  
74-N-7,8,9,10 . . . . . (Robinson, S.C., 1950)  
74-N-13 . . . . . (Alcock, 1936a)  
74-O-7 . . . . . (Alcock, 1936a); (Camsell, 1916a)  
74-O-7,8 . . . . . (Mawdsley, 1949)  
74-O-12 . . . . . (Alcock, 1936a); (Cooke, 1937a); (Geol. Survey Canada, 1947c)  
74-P . . . . . (Furnival, 1940)  
74-P-5 . . . . . (Alcock, 1936a)

**OCHRE:** (See also **Clay ironstone, Limonite**)

Sed. Sask. (Anonymous, 1947b)  
 72-O-3. (Davis, 1917)

**OIL AND GAS:**

Sed. Sask. (Alberta Soc. of Pet. Geologists, 1951); (Anonymous, 1947b);  
 (Anonymous, 1951); (Campbell, 1929); (Clapp, 1915);  
 (Edmunds, 1937); (Edmunds, 1944a); (Edmunds, 1944b);  
 (Edmunds, 1945a); (Geol. Survey Canada, 1947c); (Hume,  
 1930); (Hume, 1933); (Link, 1950); (Swain, 1944); (Wickenden,  
 1932b)

62 (Anonymous, 1944); (Dyer, 1927); (Fraser et al, 1935);  
 (Malcolm, 1913); (Warren, 1930)

62-E-2 (Clapp, 1915); (McLean, 1917)

62-K-4 (Wickenden, 1945b)

62-L (Edmunds, 1940a)

62-M-12 (Hume and Ignatieff, 1950)

62-N-12 (Edmunds, 1938); (Edmunds, 1943a); (Edmunds, 1945a);  
 (Edmunds, 1945c); (Wickenden, 1945b)

63 (Malcolm, 1913)

63-D-4 (McLearn and Wickenden, 1937)

63-D-9,16 (McLearn and Wickenden, 1936)

63-D-10 (Edmunds, 1945a)

63-D-16 (Wickenden, 1945b)

63-E (Ells, S. C., 1923); (Wallace, 1921b)

72 (Andrichuk, 1951); (Anonymous, 1944); (Dyer, 1927);  
 (Fraser et al, 1935); (Malcolm, 1913); (Ness, 1921);  
 (Warren, 1930)

72-F (Furival, 1946)

72-F-4 (Dowling, 1921a); (Sheppard, 1921)

72-F-5,6,7,10,11,12 (Russell, 1949)

72-H-4,7,10,11 (Hogg, 1950)

72-H-14 (Hume, 1930)

72-H-15 (Wickenden and Graham, 1937a)

72-I-2 (Hogg, 1950); (Wickenden and Graham, 1937a)

72-I-7 (Clapp, 1915)

72-J-4,10,15 (Hogg, 1950)

72-J-15 (Edmunds, 1945a); (Warren, 1927)

72-N (West half) (Wickenden, 1945a)

72-O-8 (Hogg, 1950)

72-O-9 (Clapp, 1915)

72-O-15 (Edmunds, 1939b)

72-P-6 (Edmunds, 1937); (Edmunds, 1943b)

73 (Malcolm, 1913); (Ness, 1921)

73-B-2 (Clapp, 1915)

73-C-6 (Edmunds, 1945a); (Hogg, 1950); (Hume and Ignatieff, 1950)

73-C-9,10,15,16 (Hume and Hage, 1936)

73-C-11 (Chantler et al, 1951)

73-C-13 (Hume, 1926); (Hume and Hage, 1941)

73-C-16 (Clapp, 1915)

73-F-1,2 (Hume and Hage, 1936)

73-F-4,5 (Edmunds, 1945a); (Edmunds, 1948); (Hume and Hage, 1940);  
 (Hume and Hage, 1941); (Hume and Ignatieff, 1950); (Johns-  
 ton, W. A., 1934); (Wickenden, 1948b); (Zwick, 1949)

73-F-5 (Chantler et al, 1951); (Edmunds, 1940c)

73-F-11 (Edmunds, 1939c)

**OIL AND GAS DEVELOPMENTS:**

Sed. Sask. (Fournier, 1947); (Galloway, 1951); (Gray and Fournier, 1948);  
 (Gray and Roliff, 1950); (Hume, 1945); (Hume, 1946)

## **OIL SHALE:**

- Sed. Sask. .... (Anonymous, 1947b)  
63-E ..... (Clapp, 1915); (Ells, S. C., 1923); (McInnes, 1913);  
(Wallace, 1921b)  
72-O-9 ..... (Stansfield and Nicolls, 1918)  
73-I-9,10,15,16 ..... (DeLury, 1926)

## **PALLADIUM:**

- 74-A-7. .... (Geol. Survey Canada, 1947c); (McMurchy, 1938a);  
(Mawdsley, 1946); (O'Neill and Gunning, 1934)

## **PEAT:**

- 62-L-6 ..... (Leverin, 1946)  
63-D-13,14 ..... (Leverin, 1946)  
63-E-5,6 ..... (Leverin, 1946)  
63-L(NW Cor.)... (Bruce, 1918)  
73-A-14 ..... (Leverin, 1946)  
73-G-16 ..... (Leverin, 1946)  
73-H-4,13 ..... (Leverin, 1946)

## **PEBBLES: (See also Ball mill pebbles)**

- 72-F ..... (Furnival, 1946); (Williams and Dyer, 1930)  
72-G-13 ..... (Davis, 1917)

## **PETROLEUM: (See Oil and gas)**

## **PITCHBLEND: (See Uranium and radioactive minerals)**

## **PLATINUM:**

- 74-A-7. .... (Geol. Survey Canada, 1947c); (McMurchy, 1938a);  
(Mawdsley, 1946); (O'Neill and Gunning, 1934)

## **POTASH:**

- Sed. Sask. .... (Anonymous, 1947a); (Anonymous, 1947b); (Cole, 1948);  
(Williams, A. J., 1947)  
62-E-L ..... (Stansfield, 1918); (Stansfield, 1919)  
62-E-12 ..... (Dowling, 1918)  
72-I-J ..... (Stansfield, 1918); (Stansfield, 1919)  
72-P-16 ..... (Dowling, 1918)  
73-C-6,11 ..... (Williams, A. J., 1947); (Williams, A. J., 1948);  
73-C-9 ..... (Williams, A. J., 1949)

## **PRODUCTION STATISTICS:**

(Anonymous, 1947a); (Anonymous, 1950); (Anonymous, 1951);  
(Bureau of Statistics); (Dept. Nat. Res. Annual Repts.);  
(Dowling, 1909); (McLeish, John); (Mines Branch)

## **PROSPECTING:**

(Mawdsley, 1934a)

## **RADIOACTIVE MINERALS: (See Uranium and radioactive minerals)**

## **SALT: (See also Potash)**

- Sed. Sask. .... (Anonymous, 1947a); (Anonymous, 1947b); (Williams, A. J.,  
1947)  
62-P-6 ..... (Edmunds, 1945b)  
63-E ..... (McInnes, 1908); (McInnes, 1913); (Richardson, 1823)  
72-F-4 ..... (Cole, 1915)  
72-P-5 ..... (Worcester, 1935)  
73-C-5 ..... (Rutherford, 1924); (Worcester, 1935)  
73-C-5,11 ..... (Cole, 1930)

## SAND AND GRAVEL:

- 62-E,L (Stansfield, 1918)  
72-G,H (Rose, 1916)  
72-I-6,7,8,9,10,11 (Reinecke, 1919)  
72-I,J (Stansfield, 1918)

## SELENIUM:

- Prec. Sask. (Anonymous, 1947b)  
63-K-13 (Stockwell, 1944); (Stockwell, 1946)

## SHALE: (See also Clay)

- Sed.-Sask. (Ries, 1913); (Worcester, 1950)  
62-E,L (Stansfield, 1919)  
63-E (Ells, S. C., 1923)  
72-I,J (Stansfield, 1919)

## SILICA SAND: (See Glass sand)

## SILVER:

- Prec. Sask. (Anonymous, 1947b)  
63-K-13 (Alcock, 1930); (Brownell and Kinkel, 1935); (Koffman, 1948); (Stockwell, 1944); (Stockwell, 1946); (Wallace, 1921a)  
74-N-7,8,9,10 (Cooke, 1937a); (Robinson, S. C., 1950)  
74-O-7 (Camsell, 1916a)

## SODIUM SULPHATE: (See also Magnesium sulphate)

- Sed. Sask. (Anonymous, 1947b); (Cole, 1926); (Geol. Survey Canada, 1947c); (Tomkins, 1948); (Worcester, 1935)  
62 (Fraser et al., 1935)  
72 (Fraser et al., 1935)  
72-H-1,2,7,11 (Cole, 1926)  
72-H-4,11 (Cole, 1924a)  
72-H-7 (Cole, 1924b)  
72-H-11 (Cole, 1924b)  
72-I-4,14 (Cole, 1924b)  
72-I-14 (Cole, 1926)  
72-J-7 (Holland, 1949)  
72-K-2,6,7,9,10 (Cole, 1926)  
72-K-6 (Cole, 1924a); (Cole, 1924b)  
72-N-5,13 (Cole, 1926)  
72-N-13 (Cole, 1924a)  
72-O-4 (Cole, 1926)  
73-A-4,5 (Cole, 1926)  
73-A-5 (Cole, 1924a)  
73-B-2 (Cole, 1926)  
73-C-1,5 (Cole, 1924a)  
73-C-1,12 (Cole, 1926)

## SULPHIDE:

- 63-L(NW Cor.) (Bruce, 1918)  
3-P (McInnes, 1914)

## TALC:

- Prec. Sask. (Anonymous, 1947b)

## TAR SAND:

73-N-15 (Chambers, 1914)

## TELLURIUM:

Prec. Sask. (Anonymous, 1947b)

63-K-13 (Stockwell, 1944)

## THORIUM:

63-K-13 (Stockwell, 1946)

## TUNGSTEN:

63-K-12 (Tanton, 1944)

63-L-9 (Tanton, 1944)

## URANIUM AND RADIOACTIVE MINERALS:

Prec. Sask. (Anonymous, 1947b)

73-P. (Lang, 1951)

73-P-2,3,6,7 (Lang, 1950)

73-P-7,8 (Bichan, 1948); (Mawdsley and Groult, 1951)

74-N. (Brooker and Nuffield, 1951)

73-N,O,P. (Lang, 1951)

74-N-7,8,9,10 (Christie and Kesten, 1949a); (Christie and Kesten, 1949b);

(Conybeare and Campbell, 1951); (James et al, 1950);

(Kerr, P. F., 1950); (Lang, 1950); (Robinson, S. C., 1950)

74-N-8 (Alcock, 1936a); (Jolliffe, 1946)

74-N-8,9 (Blake, 1951)

74-N-9,10 (Allen, R. B., 1950); (Dawson, K. R., 1951)

74-N-10 (Buffam, 1951); (Collins and Freeman, 1951)

74-P-2,3,6,7 (Hriskevich, 1949)

74-P-3 (Collins and Freeman, 1951)

74-P-3,4,5,6 (Lang, 1950)

74-P-3,6 (Allen, R. B., 1950)

74-P-7 (Mawdsley, 1950); (Mawdsley, 1951a); (Mawdsley, 1951b)

## VOLCANIC ASH:

Sed. Sask. (Anonymous, 1947b)

62 (Fraser et al, 1935)

72 (Fraser et al, 1935)

72-G-1 (Worcester, 1935)

72-H-5 (Worcester, 1935)

72-J-3,8 (Worcester, 1935)

72-J-5 (Cole, 1924c); (Eardley-Wilmot, 1927); (Williams and Dyer, 1930)

## ZINC:

Prec. Sask. (Anonymous, 1947b)

63-K-12,13 (Alcock, 1923)

63-K-13 (Alcock, 1930); (Alcock, 1935a); (Bingay and Alcock, 1927);

(Brownell and Kinkel, 1935); (Bruce, 1916); (Callinan, 1917);

(Geol. Survey Canada, 1947c); (Koffman et al, 1948);

(McClelland, 1951); (Stockwell, 1944); (Stockwell, 1946);

(Wallace, 1921a)

63-L(NW Cor.) (Bruce, 1918)

64-E-1 (Alcock, 1930); (Stockwell, 1929); (Weeks, 1940a)

73-P-7 (Keith, 1941)

74-N-7 (Jewitt and Gray, 1940)

74-N-7,8,9,10 (Robinson, S. C., 1950)

74-N-8 (Alcock, 1936a)

## Geographical Location

### AREA:

- Sask. (Anonymous, 1947b); (Bowie, 1928); (Dept. of Mines, Air); (Dept. of Mines, Top. 6); (Dept. of Mines, Top. 132); (Dept. of Mines, Top. 133); (Edmunds, 1947); (Flint, 1945); (French, 1921); (French and Madill, 1927); (Geol. Assoc. Canada, 1950); (Geol. Survey Canada, 1945); (Geol. Survey Canada, 1947a); (Geol. Survey Canada, 1947b); (Geol. Survey Canada, 1947c); (Geol. Survey Canada, 1947d); (Johnston, W. A., 1916); (Miller, A. H., 1927); (Miller, A. H., 1929a); (Miller, A. H., 1929b); (Uphan, 1895)
- Prec. Sask. (Anonymous, 1947b); (Chambers, 1914); (Cooke, 1933); (Geol. Survey Canada, 1922); (Geol. Survey Canada, 1947c); (Gill, 1949); (Harrison, 1951b); (Henderson, 1948); (McInnes, 1913); (Mawdsley, 1934a); (Mawdsley, 1944); (Mawdsley, 1948)
- Sed. Sask. (Alberta Society of Petroleum Geologists, 1951); (Anonymous, 1947a); (Anonymous, 1947b); (Anonymous, 1951); (Billings, 1859); (Bryce, 1907); (Campbell, 1929); (Clapp, 1915); (Cole, 1924a); (Cole, 1926); (Cole, 1948); (Dawson, G. M., 1875a); (Dawson, G. M., 1883); (Dawson, S. J., 1859); (Dept. of Soils, 1936); (Dowling, 1913a); (Dowling, 1913b); (Dowling, 1915b); (Dowling, 1920a); (Edmunds, 1929); (Edmunds, 1937); (Edmunds, 1940b); (Edmunds, 1944a); (Edmunds, 1944b); (Edmunds, 1945a); (Edmunds, 1947); (Geol. Survey Canada, 1947c); (Goudge, 1933); (Goudge, 1945); (Hastings, 1929); (Hector, 1861a); (Hector, 1861b); (Hind, 1859); (Hind, 1860); (Hume, 1930); (Hume, 1933); (Johnston, W. A., 1932); (Johnston and Wickenden, 1931b); (Keele, 1941); (Link, 1950); (McLearn, 1932); (McLearn, 1944a); (McLearn, 1944b); (Meek, 1859); (Mitchell et al, 1944); (Mitchell, 1950); (Perry, 1949); (Rawson and Moore, 1944); (Ries, 1913); (Russell, 1939); (Selwyn, 1874); (Sloss, 1950); (Swain, 1944); (Tomkins, 1948); (Tyrell, 1890); (Upham, 1890); (Warren, 1935); (Webb, 1951); (Wickenden, 1932a); (Wickenden, 1932b); (Wickenden, 1951); (Williams, A. J., 1947); (Worcester, 1935); (Worcester, 1950)
- 62 (Anonymous, 1944); (Bell, 1874); (Davis, 1918); (Dawson, G. M., 1881); (Dept. of Mines, Top. 1); (Dowling, 1914); (Dowling, 1919); (Dyer, 1927); (Dulieux, 1910); (Fraser, 1934b); (Hector, 1859); (Hector, 1861b); (Hector, 1863); (Hutt, 1932); (Johnston, W. A., 1931a); (Johnston, W. A., et al 1948); (Keele, 1912); (Lee, 1923); (MacKay, 1949); (McLearn and McMahon, 1934); (Malcolm, 1913); (Warren, 1930); (Wickenden, 1935); (Wood, 1941); (Worcester, 1937b)
- 62-E (Dawson, Sir J. W., 1886); (Dawson, Sir J. W., 1888); (Dowling, 1920b); (Johnston and Wickenden, 1930); (McLean, 1918); (Russell, 1932); (Selwyn, 1881)
- 62-E,F (Dawson, G. M., 1875b); (Dowling, 1903); (McLean, 1917); (Williams and Dyer, 1930)
- 62-E,F,K,L (Dept. of Mines, Top. 8)
- 62-E,L,M (Dept. of Mines, Top. 7); (Fraser, F. J., et al 1935)
- 62-E-1,2,3,4,5,6,7,8,9,10,11,12 (Dept. of Mines, Top. 50)
- 62-E-1,2,7,8 (Dept. of Soils, 1926b)
- 62-E-2 (Clapp, 1915); (Dawson, G. M., 1874); (Dawson, G. M., 1875c); (Dawson, Sir J. W., 1818); (Dowling, 1904); (Dowling, 1915a); (Dowling, 1921b); (Hector, 1859); (Hector, 1863); (Hoffman, 1881); (Hoffman, 1885); (Lee, 1923); (McLean, 1921); (Parks, 1916); (Penhallow, 1903); (Penhallow, 1908); (Porter et al, 1912); (Ries, 1911a); (Ries, 1911b); (Ries and Keele, 1912); (Stansfield and Nicolls, 1918); (Wallace and McCartney, 1928); (Whiteaves, 1885); (Williams and Dyer, 1930)

- 62-E-2,3 (Davis, 1917); (Johnston, R. A., 1915)  
62-E-3 (Davis, 1916)  
62-E-3,6,12 (Dowling, 1919)  
62-E-12 (Dowling, 1918)  
62-E-12,15 (Dept. of Soils, 1926a)  
62-E-13,14,15,16 (Dept. of Mines, Top. 51)  
62-F (West half) (Johnston, W. A., 1931b)  
62-F-3,4,5,6,11,12 (Dept. of Mines, Top. 52)  
62-F-3,4,5,6,11,12,13,14 (Wickenden, 1945b)  
62-F-13,14 (Dept. of Mines, Top. 53)  
62-K,L,M,N (Dept. of Mines, Top. 9)  
62-K-3,4,5,6 (Dept. of Mines, Top. 53)  
62-K-3,4,5,12,13 (Wickenden, 1945b)  
62-K-11,12,13,14 (Dept. of Mines, Top. 54)  
62-L (Edmunds, 1940a)  
62-L-1,2,3,4,5,6,7,8 (Dept. of Mines, Top. 51)  
62-L-5,6,7,8,9,10,11,12,13,14,15,16 (Dept. of Mines, Top. 55)  
62-L-6 (Leverin, 1946)  
62-L-6,7,12 (Davis, 1917)  
62-L-12 (Dept. of Mines, Top. 102); (Ries and Keele, 1913)  
62-L-13 (Tyrrell, 1892)  
62-M,N (Tyrrell, 1889)  
62-M-1,2,3,4 (Dept. of Mines, Top. 55)  
62-M-1,2,3,4,5,6,7,8,9,10,11,12 (Dept. of Mines, Top. 56)  
62-M-4,5,12,13 (Tyrrell, 1892)  
62-M-12 (Clapp, 1915); (Hume and Ignatieff, 1950)  
62-M-12,13 (Dowling, Slipper and McLearn, 1919)  
62-M-13 (Hoffman, 1877)  
62-M-13,14,15,16 (Dept. of Mines, Top. 57)  
62-N (Bell, 1876); (Spencer, 1876); (Whiteaves, 1889)  
62-N-3,4 (Dept. of Mines, Top. 54)  
62-N-3,4,5,6,11,12,13,14 (Dept. of Mines, Top. 58)  
62-N-4,5,12,13 (Wickenden, 1945b)  
62-N-12 (Edmunds, 1938); (Edmunds, 1943a); (Edmunds, 1945a); (Edmunds, 1945c); (Keele, 1915)  
62-N-13 (Dept. of Mines, Top. 59); (Selwyn, 1877)  
62-P-6 (Edmunds, 1945b)  
63 (Dept. of Mines, Top. 2); (McInnes, 1913); (Malcolm, 1913)  
63 (North half) (Richardson, 1823); (Richardson, 1851)  
63-C,D,E,F (Dept. of Mines, Top. 10)  
63-C,D,E,F,L,K (Wright, 1934)  
63-C-4,5 (Dept. of Mines, Top. 59)  
63-C-4,5,12,13 (Wickenden, 1945b)  
63-C-13 (Worcester, 1943b)  
63-D (MacKay, 1949)  
63-D,E (Johnston, W. A., 1946)  
63-D-1,2,3,4,5,6,7,8 (Dept. of Mines, Top. 57)  
63-D-1,2,7,8,9,10,15,16 (Wickenden, 1945b)  
63-D-4 (McLearn and Wickenden, 1937)  
63-D-4,5,12,13 (Tyrrell, 1892)  
63-D-6 (Forestry Branch, 1950-51, 1)  
63-D-7 (Forestry Branch, 1950-51, 2)  
63-D-8 (Forestry Branch, 1950-51, 3)  
63-D-9 (Forestry Branch, 1950-51, 4)

- 63-D-9,10,11,12,13,  
14,15,16 (Dept. of Mines, Top. 60)
- 63-D-9,10,15,16 (Dept. of Mines, Top. 96)
- 63-D-9,16 (McLearn and Wickenden, 1936)
- 63-D-10 (Edmunds, 1945a)
- 63-D-11,12,13,14 (Dept. of Mines, Top. 97)
- 63-D-12,13 (Dept. of Mines, Top. 61)
- 63-D-13,14 (Leverin, 1946)
- 63-D-15 (Forestry Branch, 1950-51, 5)
- 63-D-16 (Forestry Branch, 1950-51, 6)
- 63-E (Clapp, 1915); (Ells, S. C., 1923); (McInnes, 1908); (McInnes, 1913); (Malcolm, 1913); (Upham, 1921b); (Wallace, 1921b)
- 63-E,K,L,M (Tyrrell, 1897)
- 63-E,L (Goudge, 1945); (Richardson, 1823)
- 63-E,L,M (McInnes, 1909)
- 63-E-1 (Forestry Branch, 1950-51, 7)
- 63-E-1,2,3,4 (Dept. of Mines, Top. 60)
- 63-E-1,2,7,8 (Dept. of Mines, Top. 98)
- 63-E-3,4,5,6 (Dept. of Mines, Top. 99)
- 63-E-5,6 (Leverin, 1946)
- 63-E-5,6,7,8,9,10,11,  
12,13,14,15,16 (Dept. of Mines, Top. 62)
- 63-E-8 (Forestry Branch, 1950-51, 8)
- 63-E-8,9 (Spence, 1924)
- 63-E-9 (Forestry Branch, 1950-51, 9)
- 63-E-9,10,15,16 (Dept. of Mines, Top. 100)
- 63-E-11,12,13,14 (Dept. of Mines, Top. 101)
- 63-E-13,14,15,16 (Dept. of Mines, Top. 63)
- 63-E-16 (Dowling, 1902); (Tyrrell, 1902); (Whiteaves, 1906)
- 63-F (Dept. of Mines, Top. 30)
- 63-F-4 (Dept. of Mines, Top. 61)
- 63-F-5,12,13 (Dept. of Mines, Top. 64)
- 63-F-13 (Dept. of Mines, Top. 65); (Dowling, 1902); (Tyrrell, 1902)
- 63-K (Dept. of Mines, Top. 31)
- 63-K,L (Alcock, 1924)
- 63-K,L,M,N (Dept. of Mines, Top. 11)
- 63-K,L(East half),  
M(East half), N (Dept. of Mines, Top. 26)
- 63-K-4 (Whiteaves, 1897a)
- 63-K-4,5 (Dept. of Mines, Top. 65); (Dowling, 1902); (Tyrrell, 1902)
- 63-K-5,12,13 (Bruce, 1914); (Bruce, 1918)
- 63-K-12 (Anonymous, 1950); (Dept. of Mines, Top. 103); (Harrison, 1951b); (Tanton, 1941b); (Tanton, 1944)
- 63-K-12,13 (Alcock, 1923); (Ambrose, 1936b); (Dept. of Mines, Top. 66); (Harrison, 1951a); (Stockwell, 1946); (Wallace and DeLury, 1916); (Wright and Stockwell, 1934a)
- 63-K-13 (Alcock, 1930); (Alcock, 1935a); (Ambrose, 1936a); (Bingay and Alcock, 1927); (Brownell and Kinkel, 1935); (Browning, 1927); (Bruce, 1916); (Bruce, 1924); (Callinan, 1917); (DeLury, 1916); (Geol. Survey Canada, 1947c); (Kerr, 1938); (Kerr and Ruttan, 1936); (Koffman, Stockwell et al, 1948); (McClelland, 1951); (Stockwell, 1944); (Tanton, 1941a); (Tanton and Harrison, 1950); (Upham, 1895); (Wallace, 1921a); (Wright, 1935)
- 63-L (Dept. of Mines, Top. 32); (McInnes, 1911)
- 63-L(East half) (Mawdsley, 1944)
- 63-L,M (Bell, 1881); (McInnes, 1913)
- 63-L-1,2,3,4,5,6,7,8 (Dept. of Mines, Top. 63)
- 63-L-8,9,16 (Bruce, 1914); (Bruce, 1918)



- 63-L-9 (Bruce, 1915a); (Bruce, 1915b); (Bruce, 1916); (Bruce, 1924); (Dept. of Mines, Top. 104); (Harrison, 1951b); (Mawdsley, 1934b); (Tanton, 1940); (Tanton, 1944); (Tyrrell, 1915).
- 63-L-9,10,15,16 (Wright and Stockwell, 1935)
- 63-L-9,16 (Ambrose, 1936b); (Harrison, 1951a); (Stockwell, 1944); (Wright, 1933)
- 63-L-10 (Dept. of Mines, Top. 105); (Eastwood, 1951)
- 63-L-10,15 (Wright and Stockwell, 1934b)
- 63-L-11,12,13,14 (DeLury, 1926)
- 63-L-15 (Dept. of Mines, Top. 106)
- 63-L-16 (Dept. of Mines, Top. 107); (Lang, 1949)
- 63-M (Dept. of Mines, Top. 33); (Satterly, 1932)
- 63-M-1 (Allen, C. C., 1941)
- 63-M-11 (Satterly, 1932)
- 63-N (Dept. of Mines, Top. 34)
- 63-N-4 (Dept. of Mines, Top. 66); (Dept. of Mines, Top. 108); (Harrison, 1949)
- 63-N-4,5 (Wright, 1928)
- 64 (McInnes, 1913); (Tyrrell and Dowling, 1896)
- 64-C,D,E,F (Dept. of Mines, Top. 12).
- 64-C,D(East half,  
E(East half), F,K,  
L(East half) (Dept. of Mines, Top. 27)
- 64-D (Alcock, 1938); (Dept. of Mines, Top. 35)
- 64-D(East half) (Alcock, 1939a)
- 64-D(West half) (Alcock, 1939b)
- 64-D,E (Bell, 1881); (Tyrrell, 1897)
- 64-D-4,5 (Byers, 1949)
- 64-D-10 (Anonymous, 1950)
- 64-E (Dept. of Mines, Top. 36)
- 64-E(East half) (Weeks, 1940a)
- 64-E(West half) (Weeks, 1940b)
- 64-E,D (Stockwell, 1929)
- 64-E,L,M (McInnes, 1913)
- 64-E-1 (Alcock, 1930); (Stockwell, 1929)
- 64-K,L,M,N (Dept. of Mines, Top. 13)
- 64-L (Dept. of Mines, Top. 37)
- 64-L,M (Dept. of Mines, Top. 28)
- 72 (Allan, 1918); (Andrichuk, 1951); (Anonymous, 1944); (Bell, 1874); (Collier and Thom, 1918); (Dawson, G. M., 1881); (Dept. of Mines, Top. 3); (Dowling, 1914); (Dowling, Slipper and McLearn, 1919); (Dulieux, 1910); (Dyer, 1927); (Fraser, 1934a); (Fraser, 1934b); (Hector, 1859); (Hector, 1861b); (Hector, 1863); (Hutt, 1932); (Johnston, W. A., 1931a); (Johnston, W. A. et al, 1948); (Keele, 1912); (Lee, 1923); (MacKay, 1949); (McLearn and McMahon, 1934); (Malcolm, 1913); (Ness, 1921); (Tyrrell, 1877); (Warren, 1930); (Warren, 1934); (Whiteaves, 1885); (Wickenden, 1935); (Wickenden, 1937); (Wood et al, 1941); (Worcester, 1937b).
- 72-B42,9 (Ries and Keele, 1912)
- 72-F (Alden, 1924); (Alden, 1932); (Berry, 1930); (Cope, 1891); (Dawson, Sir J. W., 1888); (Eardley-Wilmot, 1927); (Eggles-ton, 1951); (Hamelin, 1931); (Lawson, 1925); (Malcolm, 1913); (Russell, 1938); (Russell, 1940b); (Russell, 1947); (Russell, 1950a); (Williams, M. Y., 1929); (Williams, M. Y., 1932)
- 72-F(West half) (Furnival, 1946); (Williams et al, 1928)
- 72-F,G (Fraser, 1929); (Hoffman, 1886); (McLearn, 1929); (Russell, 1930)
- 72-F,G,H (Alden, 1932); (Berry, 1935); (Dawson, G. M., 1875b); (Dowling, 1915a); (Hutt, 1930); (Russell, 1932); (Russell, 1950b); (Williams and Dyer, 1930)
- 72-F(West half),G,H (Fraser et al, 1935)

- 72-F,G,J,K (Dept. of Soils, 1931)  
 72-F,G,K,J (McConnell, 1886)  
 72-F,K (Dept. of Mines, Top. 14)  
 72-F-1,2,3,4,5,6,7,8,9,10,11,12 (Dept. of Mines, Top. 67)  
 72-F-3,4,5,6 (Dept. of Soils, 1925); (Furnival, 1941c)  
 72-F-3,4,5,6,7,12,13,14 (Furnival, 1942)  
 72-F-4 (Cole, 1915); (Cushman, 1927); (Dowling, 1921a); (Hume, 1933); (Sheppard, 1921); (Wickenden, 1932b); (Wickenden, 1935)  
 72-F-4,7,10 (Worcester, 1937a)  
 72-F-4,11,12,13 (Furnival, 1946)  
 72-F-5,6,7,10,11,12 (Russell, 1949)  
 72-F-5,7 (Spence, 1924)  
 72-F-6 (Robinson, H. R., 1945)  
 72-F-6,10 (Davis, 1916); (Ries and Keele, 1913)  
 72-F-7,10 (Fraser, 1928); (McLearn, 1928)  
 72-F-9 (Russell, 1934b)  
 72-F-10 (Cope, 1885a); (Cope, 1886); (Cope, 1889a); (Cope, 1889b); (Cope, 1891); (Keele, 1915); (Lambe, 1905a); (Lambe, 1905c); (Russell, 1934c); (Russell, 1936); (Russell, 1940a); (Russell, 1940c); (Russell, 1943b); (Russell, 1950b); (Weston, 1895); (Worcester, 1943a)  
 72-F-10-11 (Sternberg, 1924)  
 72-F-10,14 (Worcester, 1944)  
 72-F-10,15 (Lambe, 1905b); (Lambe, 1908)  
 72-F-12 (Anonymous, 1947b)  
 72-F-13 (Douglas, 1942)  
 72-F-13,14,15,16 (Dept. of Mines, Top. 68)  
 72-F-14 (Dowling, 1915a); (Dowling, Slipper and McLearn, 1919)  
 72-G,H (Rose, 1916); (Wickenden, 1931a)  
 72-G,H,I (Worcester, 1938)  
 72-G,H,I,J (Dept. of Mines, Top. 15)  
 72-G-1 (Worcester, 1935)  
 72-G-1,2 (Cope, 1875)  
 72-G-1,2,3,4,5,6,7,8,9,10,11,12 (Dept. of Mines, Top. 69)  
 72-G-1,2,3,6,7,8 (Rose, 1915)  
 72-G-2 (Russell, 1934a); (Sternberg, 1926)  
 72-G-4 (Worcester, 1937a)  
 72-G-7,8 (Johnston, R. A. A., 1915); (Stansfield and Nicolls, 1918)  
 72-G-8 (Davis, 1916); (Russell, 1934b); (Sternberg, 1930)  
 72-G-13 (Davis, 1917); (Worcester, 1943a); (Worcester, 1944)  
 72-G-13,14,15,16 (Dept. of Mines, Top. 70)  
 72-H (Houldsworth, 1941)  
 72-H,G (Selwyn, 1881)  
 72-H(North half)  
 72-H(South half) (Weeks et al, 1948)  
 72-H,I,J,O (Johnston and Wickenden, 1930)  
 72-H,J (Wickenden, 1931b)  
 72-H-1 (Mozley, 1932); (Russell, 1934b)  
 72-H-1,2,3,1,5,6,7,8,9,10,11,12 (Dept. of Mines, Top. 71)  
 72-H-1,2,7,11 (Cole, 1926)  
 72-H-2 (Brown and Houldsworth, 1939); (Russell, 1934a)  
 72-H-2,3,4 (Dawson, G. M., 1874)  
 72-H-2,3,4,5,6,7,10,11,12 (Rose, 1914)

- 72-H-2,6,8,9,12,13 (Keele, 1915)  
 72-H-3,4 (Dawson, Sir J. W., 1875); (Penhallow, 1908)  
 72-H-3,4,5,6 (Fraser, 1930); (McLearn, 1931); (McLearn, 1930)  
 72-H-3,12 (Russell, 1932)  
 72-H-4,7,10,11 (Hogg, 1950)  
 72-H-4,11 (Cole, 1924a)  
 72-H-5 (Stansfield and Nicolls, 1918); (Sternberg, 1932); (Worcester, 1935)  
 72-H-7 (Cole, 1924b)  
 72-H-7,10,11,14 (Hogg, 1950)  
 72-H-9 (Ries and Keele, 1913)  
 72-H-9,15 (Dept. of Soils, 1926a)  
 72-H-10 (Alberta Society of Petroleum Geologists, 1951)  
 72-H-11 (Cole, 1924b)  
 72-H-12 (Cole, 1928)  
 72-H-12,13 (Davis, 1916)  
 72-H-13,14,15,16 (Dept. of Mines, Top. 72)  
 72-H-14 (Dowling, 1909); (Hume, 1930); (Ries, 1911b); (Wilson, 1912)  
 72-H-15 (Wickenden and Graham, 1937)  
 72-H-16 (Dowling, 1919)  
 72-I (Simpson, 1930)  
 72-I-J (Stansfield, 1918); (Stansfield, 1919)  
 72-I-J,O,P (Dept. of Mines, Top. 16)  
 72-I-1,2,3,4,5,6,7,8 (Dept. of Mines, Top. 72)  
 72-I-2 (Dowling, 1919); (Hogg, 1950); (Wickenden and Graham, 1937)  
 72-I-2,5,6,7 (Dowling et al, 1919)  
 72-I-2,5,6,7,9 (Clapp, 1915)  
 72-I-2,6,7,16 (Malcolm, 1913)  
 72-I-3 (Davis, 1916); (Stansfield, 1922)  
 72-I-3,4 (Worcester, 1929)  
 72-I-3,4,5,6 (Dept. of Soils, 1923a)  
 72-I-3,7,15 (Ries and Keele, 1913)  
 72-I-4 (Cole, 1924b)  
 72-I-4,5 (Mitchell et al, 1942)  
 72-I-4,14 (Cole, 1926)  
 72-I-5 (Goudge, 1945); (Wickenden, 1932b); (Wickenden, 1933)  
 72-I-5,6 (Johnston and Wickenden, 1931a)  
 72-I-5,6,7,8,9,10,11,12,13,14,15,16 (Dept. of Mines, Top. 73)  
 72-I-5,8 (Hume, 1933)  
 72-I-6,7,8,9,10,11 (Reinecke, 1919)  
 72-I-7 (Davis, 1917); (Edmunds, 1929)  
 72-I-9 (Dept. of Mines, Top. 102)  
 72-L13 (Warren, 1930)  
 72-J-1 (Russell, 1931b)  
 72-J-1,2,3,4,5,6,7,8 (Dept. of Mines, Top. 70)  
 72-J-1,2,7,8 (Mitchell et al, 1942)  
 72-J-3,8 (Worcester, 1935)  
 72-J-4 (Worcester, 1943a); (Worcester, 1944)  
 72-J-4,8,12 (Dept. of Soils, 1923b)  
 72-J-4,10,15 (Hogg, 1950)  
 72-J-5 (Cole, 1924c); (Eardley-Wilmot, 1927); (Russell, 1950b); (Russell and Wickenden, 1933); (Williams and Dyer, 1930)  
 72-J-5,6,7,8,9,10,11,12,13,14,15,16 (Dept. of Mines, Top. 34)  
 72-J-5,6,11,12,13,14 (Maddox, 1933)  
 72-J-5,8 (Keele, 1915)  
 72-J-6 (Wickenden, 1932b)

- 72-J-6,15 (Hume, 1933)  
 72-J-7 (Holland, 1949)  
 72-J-9 (Johnston and Wickenden, 1931a)  
 72-J-9,10,15,16 (Maddox, 1932)  
 72-J-11 (Cushman, 1927)  
 72-J-12 (Weston, 1899); (Whiteaves, 1897b)  
 72-J-14 (Malcolm, 1913)  
 72-J-15 (Edmunds, 1945a); (Warren, 1927)  
 72-J-16 (Dowling et al., 1919)  
 72-K (Cole, 1928); (Dept. of Soils, 1929); (Edmunds, 1929)  
 72-K (West half) (Williams et al., 1928)  
 72-K,F (Weeks et al., 1948)  
 72-K (West half), J, I (Fraser et al., 1935)  
 72-K,N (Dept. of Mines, Top. 17)  
 72-K-1,2,3,4,5,6,7,8 (Dept. of Mines, Top. 68)  
 72-K-1,8,9 (Dept. of Soils, 1923b)  
 72-K-2,6,7,9,10 (Cole, 1926)  
 72-K-6 (Cole, 1924a); (Cole, 1924b)  
 72-K-9 (Clapp, 1915)  
 72-K-9,10,11,12,13, 14,15,16 (Dept. of Mines, Top. 75)  
 72-K-10 (Edmunds, 1929)  
 72-K-14 (Wickenden, 1948a)  
 72-K-15 (Davis, 1917)  
 72-N (West half) (Wickenden, 1945a); (Williams et al., 1928)  
 72-N (West half) O, P... (Fraser et al., 1935)  
 72-N-1,2,3,4 (Dept. of Mines, Top. 72)  
 72-N-5,6,7,8,9,10,11, 12,13,14,15,16 (Dept. of Mines, Top. 76)  
 72-N-5,13 (Cole, 1926)  
 72-N-7 (Dowling, 1912)  
 72-N-8,9,16 (Dept. of Soils, 1927)  
 72-N-9 (Dowling, 1909); (Warren, 1930)  
 72-N-9,13 (Hume, 1933)  
 72-N-12,13 (Dept. of Mines, Top. 77)  
 72-N-13 (Cole, 1924a); (Dowling et al., 1919)  
 72-N-13,14,15,16 (Dept. of Mines, Top. 78)  
 72-N-16 (Nininger, 1932)  
 72-O-1,2,3,4,5,6,7,8, 9,10,11,12 (Dept. of Mines, Top. 79)  
 72-O-1,2,3,4,7,8,9,10 (Maddox, 1933)  
 72-O-2 (Ghalmers, 1906a); (Hector, 1859); (Hector, 1863); (Keele, 1915)  
 72-O-3 (Davis, 1917)  
 72-O-4 (Cole, 1926)  
 72-O-5,12,13 (Dept. of Soils, 1927)  
 72-O-6,9,15 (Hume, 1933)  
 72-O-8 (Hogg, 1950)  
 72-O-9 (Clapp, 1915); (Stansfield and Nicolls, 1918)  
 72-O-9,15 (Warren, 1930)  
 72-O-12 (Baker, 1934); (Edmunds, 1929); (Russell, 1934b)  
 72-O-13,14,15,16 (Dept. of Mines, Top. 80)  
 72-O-15 (Edmunds, 1939b); (Parks, 1925); (Warren, 1937)  
 72-O-16 (Edmunds et al., 1938)  
 72-P-1,2,3,4,5,6,7,8, 9,10,11,12 (Dept. of Mines, Top. 81)  
 72-P-5 (Keele, 1915); (Worcester, 1935)  
 72-P-6 (Edmunds, 1937); (Edmunds, 1943b); (Hume, 1933), (Warren, 1930); (Wickenden, 1932b)

- 72-P-11,13 ..... (Goudge, 1945)
- 72-P-13 ..... (Goudge, 1930)
- 72-P-13,14,15,16: (Dept. of Mines, Top. 82)
- 72-P-16 ..... (Dowling, 1918)
- 73 ..... (Allan, 1918); (Dept. of Mines, Top. 4); (Dowling et al, 1919); (Hector, 1859); (Hector, 1863); (Hector, 1861b); (McInnes, 1913); (Malcolm, 1913); (Ness, 1921); (Tyrrell, 1877)
- 73(North half).... (Richardson, 1823)
- 73-A,B,C ..... (MacKay, 1949)
- 73-A,B,G,H. .... } (Dept. of Mines, Top. 18)
- 73-A-1. .... (Mozley, 1932)
- 73-A-1,2,3,4,5,6,7,8/... (Dept. of Mines, Top. 82)
- 73-A-4,5 ..... (Cole, 1926)
- 73-A-5 ..... (Cole, 1924a); (Keele, 1915); (Nininger, 1936)
- 73-A-7 ..... (Johnston and Ellsworth, 1921)
- 73-A-9,10,11,12,13, 14,15,16. .... (Dept. of Mines, Top. 83)
- 73-A-10,11,14,15. .... (Dept. of Soils, 1928)
- 73-A-12 ..... (Goudge, 1945)
- 73-A-14 ..... (Leverin, 1946)
- 73-B-1,2,3,4,5,6,7,8. .... (Dept. of Mines, Top. 80)
- 73-B-2 ..... (Campbell, 1929); (Clapp, 1915); (Cole, 1926); (Dept. of Mines, Top. 109); (Goudge, 1930); (Goudge, 1945); (Keele, 1915); (Parks, 1915); (Ries and Keele, 1913); (Russell, 1941); (Russell, 1943a)
- 73-B-7 ..... (Dowling et al, 1919); (Malcolm, 1913)
- 73-B-9,10,11,12,13, 14,15,16. .... (Dept. of Mines, Top. 84)
- 73-B-15 ..... (Ells, R. W., 1877)
- 73-C. .... (Wickenden, 1932b); (Wickenden, 1951)
- 73-C(East half) ... (Hume, 1939a)
- 73-C(West half).... (Hume 1939b)
- 73-C,F. .... (Dept. of Mines, Top. 19)
- 73-C-1,2,3,4,5,6,7,8. .... (Dept. of Mines, Top. 78)
- 73-C-1,5. .... (Cole, 1924a)
- 73-C-1,12 ..... (Cole, 1926)
- 73-C-4,5 ..... (Dept. of Mines, Top. 77)
- 73-C-4,6. .... (Dowling, 1915a)
- 73-C-5 ..... (Rutherford, 1924); (Worcester, 1935)
- 73-C-5,11 ..... (Cole, 1930)
- 73-C-6 ..... (Edmunds, 1945a); (Hogg, 1950); (Hume, 1933); (Hume and Ignatieff, 1950); (Wickenden, 1932b)
- 73-C-6,11. .... (Williams, A. J., 1947); (Williams, A. J., 1948)
- 73-C-9. .... (Williams, A. J., 1949)
- 73-C-9,10,11,12,13, 14,15,16. .... (Dept. of Mines, Top. 85)
- 73-C-9,10,15,16. .... (Hume and Hage, 1936)
- 73-C-11 ..... (Anonymous, 1947a); (Chantler et al, 1951)
- 73-C-13. .... (Hume, 1926); (Hume and Hage, 1941)
- 73-C-16. .... (Clapp, 1915)
- 73-F(East half).... (Geol. Survey Canada, 1939a)
- 73-F(West half). .... (Geol. Survey Canada, 1939b)
- 73-F-1,2. .... (Hume and Hage, 1936)
- 73-F-1,2,3,4. .... (Dept. of Mines, Top. 85)
- 73-F-4,5. .... (Edmunds, 1945a); (Edmunds, 1948); (Hume and Hage, 1940); (Hume and Hage, 1941); (Hume and Ignatieff, 1950); (Johnston, W. A., 1934); (Wickenden, 1941); (Wickenden, 1948b); (Zwick, 1949)

73-F-5	(Chantler et al, 1951); (Edmunds, 1940c); (Hume, 1933)
73-F-5,6,7,8,9,10,11, 12,13,14,15,16	(Dept. of Mines, Top. 86)
73-F-11	(Edmunds, 1939c)
73-F-12	(Edmunds, 1939a)
73-G-1,2,3,4	(Dept. of Mines, Top. 84)
73-G-5,6,7,8,9,10, 11,12	(Dept. of Mines, Top. 87)
73-G-8	(Anonymous, 1947b)
73-G-9,10,15,16	(Dept. of Mines, Top. 134)
73-G-13,14,15,16	(Dept. of Mines, Top. 88)
73-G-16	(Leverin, 1946)
73-H	(Dept. of Mines, Top. 38)
73-H-2,3	(Dept. of Soils, 1928)
73-H-4	(Parks, 1916); (Ries and Keele, 1912)
73-H-4,13	(Leverin, 1946)
73-H-5,6,7,8,9,10, 11,12	(Dept. of Mines, Top. 89)
73-H-8	(Goudge, 1930)
73-H-12,14	(Dept. of Mines, Top. 134)
73-H-13,14,15,16	(Dept. of Mines, Top. 90)
73-I	(McInnes, 1913)
73-I,J,O,P	(Dept. of Mines, Top. 20)
73-I-1,2,3,4,5,6,7,8	(Dept. of Mines, Top. 90)
73-I-4,5	(Dept. of Mines, Top. 134)
73-I-5	(Forestry Branch, 1950-51, 10)
73-I-6	(Forestry Branch, 1950-51, 11)
73-I-9,10,15,16	(DeLury, 1926)
73-I-15	(Dowling, 1915a)
73-I-15,16	(McInnes, 1910); (McInnes, 1913); (Wallace and McCartney, 1928)
73-I-16	(Cole, 1928)
73-J...	(Dept. of Mines, Top. 39)
73-J-1,2,3,4,5,6,7,8	(Dept. of Mines, Top. 88)
73-J-1,2,7,8	(Dept. of Mines, Top. 134)
73-J-4	(Johnston, R. A. A., 1915)
73-J-5	(Forestry Branch, 1950-51, 12)
73-J-6	(Forestry Branch, 1950-51, 13)
73-J-9,10,11,12,13, 14,15,16	(Dept. of Mines, Top. 91)
73-J-10	(Forestry Branch, 1950-51, 14)
73-J-11	(Forestry Branch, 1950-51, 15)
73-J-14	(Forestry Branch, 1950-51, 16)
73-J-15	(Forestry Branch, 1950-51, 17)
73-J-16	(Forestry Branch, 1950-51, 18)
73-K,N	(Dept. of Mines, Top. 21)
73-K-1,2,3,4,5,6,7,8, 9,10,11,12	(Dept. of Mines, Top. 92)
73-K-5	(Dept. of Mines, Top. 110)
73-K-6	(Dept. of Mines, Top. 111)
73-K-7	(Dept. of Mines, Top. 112)
73-K-9	(Dept. of Mines, Top. 113)
73-K-9,10,11,12,13, 14,15,16	(Dept. of Mines, Top. 93)
73-K-10	(Dept. of Mines, Top. 114)
73-K-11	(Dept. of Mines, Top. 115)
73-K-12	(Dept. of Mines, Top. 116)
73-K-13	(Dept. of Mines, Top. 117)
73-K-15	(Dept. of Mines, Top. 118)

- 73-K-16 . . . . . (Dept. of Mines, Top. 119)  
 73-N . . . . . (Dept. of Mines, Top. 40)  
 73-N,O . . . . . (Bell, 1885)  
 73-N,O,P . . . . . (Tyrrell and Dowling, 1896)  
 73-N-1,2,3,4 . . . . . (Dept. of Mines, Top. 93)  
 73-N-5,6,7,8,9,10,11,  
 12,13,14,15 . . . . . (Dept. of Mines, Top. 94)  
 73-N-15 . . . . . (Chambers, 1914)  
 73-O . . . . . (Dept. of Mines, Top. 41); (Frarey, 1950)  
 73-O-1,2,3,4 . . . . . (Dept. of Mines, Top. 91)  
 73-P . . . . . (Bruce, 1924); (Dept. of Mines, Top. 42); (Land, 1951);  
 (McInnes, 1909); (McInnes, 1913)  
 73-P(East half) . . . . . (McLarty, 1936b)  
 73-P(South half) . . . . . (Mawdsley, 1944)  
 73-P(West half) . . . . . (McLarty, 1936a)  
 73-P-1,2,3,6,7,8 . . . . . (McInnes, 1910)  
 73-P-2,3,6,7 . . . . . (Lang, 1950)  
 73-P-3 . . . . . (Mawdsley, 1934b)  
 73-P-6,7 . . . . . (Lang, 1949); (Mawdsley, 1940)  
 73-P-7 . . . . . (Dept. of Mines, Top. 120); (Keith, 1941)  
 73-P-8 . . . . . (Dept. of Mines, Top. 121); (Satterly, 1932)  
 73-P-8,15 . . . . . (Bruce and Matheson, 1930)  
 73-P-9 . . . . . (Dept. of Mines, Top. 122)  
 73-P-15 . . . . . (Dept. of Mines, Top. 123)  
 73-P-16 . . . . . (Dept. of Mines, Top. 124)  
 74 . . . . . (Alcock, 1920a); (Dept. of Mines, Top. 5); (Dept. of Mines,  
 Top. 43); (McInnes, 1913); (Mawdsley, 1944); (Sproule,  
 1951); (Tyrrell, 1893); (Tyrrell, 1896)  
 74-A . . . . . (Dept. of Mines, Top. 43)  
 74-A(East half) . . . . . (McMurchy, 1938a)  
 74-A(South half) . . . . . (Mawdsley, 1944)  
 74-A(West half) . . . . . (McMurchy, 1938b)  
 74-A,B,G,H . . . . . (Dept. of Mines, Top. 22); (Rice, 1950)  
 74-A-1 . . . . . (Dept. of Mines, Top. 125); (Miller, M. L., 1949)  
 74-A-7 . . . . . (Bruce and Matheson, 1930); (Geol. Survey Canada, 1947c);  
 (Mawdsley, 1946); (Ross, 1938)  
 74-B . . . . . (Alcock, 1935b); (Dept. of Mines, Top. 44); (Sproule, 1938a)  
 74-B(East half) . . . . . (Alcock et al, 1941)  
 74-B(West half) . . . . . (Sproule and Downie, 1941b)  
 74-B,F,G . . . . . (Sproule, 1939)  
 74-C . . . . . (Bell, 1885)  
 74-C,F . . . . . (Dept. of Mines, Top. 23)  
 74-C-1,2,3,4,5,6,7,8,  
 9,10,11,12 . . . . . (Dept. of Mines, Top. 95)  
 74-E . . . . . (Dept. of Mines, Top. 45)  
 74-F(East half) . . . . . (Sproule et al, 1941)  
 74-F-16 . . . . . (Howells, 1941)  
 74-G . . . . . (Dept. of Mines, Top. 46); (Sproule, 1938b)  
 74-G(East half) . . . . . (Sproule, 1941)  
 74-G(West half) . . . . . (Sproule and Downie, 1941a)  
 74-I,J,O,P . . . . . (Dept. of Mines, Top. 24)  
 74-I,P . . . . . (Dept. of Mines, Top. 28)  
 74-J(North half),K  
 (North half),N,O . . . . . (Dept. of Mines, Top. 29)  
 74-K,J,N,O . . . . . (Alcock and Camsell, 1916)  
 74-K,N . . . . . (Camsell, 1916b); (Dept. of Mines, Top. 25)  
 74-N . . . . . (Alcock, 1915); (Brooker and Nuffield, 1951); (Bruce, 1924);  
 (Dept. of Mines, Top. 47)  
 74-N(East half) . . . . . (Mawdsley, 1944)

- 74-N,O ... (Alcock, 1920c)  
 74-N,O,P... (Alcock, 1936a); (Johnston, C. S., 1951); (Lang, 1951)  
 74-N-5,10 ... (Johnston, R. A. A., 1915)  
 74-N-7 ... (Dept. of Mines, Top. 126); (Jewitt and Grey, 1940)  
 74-N-7,8,9,10... (Alcock, 1917); (Anonymous, 1947c); (Christie and Kesten, 1949a); (Christie and Kesten, 1949b); (Conybeare and Campbell, 1951); (Cooke, 1937a); (James et al, 1950); (Kerr, P. F., 1950); (Lang, 1950); (Robinson, S. C., 1950)  
 74-N-8 ... (Alcock, 1936b); (Allan and Cameron, 1923); (Byrne, 1937); (Cooke, 1946); (Dept. of Mines, Top. 127); (Jolliffe, 1946); (Lang, 1949)  
 74-N-8,9 ... (Blake, 1951); (Geol. Survey Canada, 1947c)  
 74-N-9 ... (Cameron, 1935)  
 74-N-9(East half).... (Dept. of Mines, Top. 128)  
 74-N-9,10... (Allen, R. B., 1950); (Conybeare and Ferguson); (Dawson, K. R., 1951)  
 74-N-10 ... (Buffam, 1951); (Collins and Freeman, 1951); (Conybeare, 1949a); (Conybeare, 1949b); (Conybeare, 1950); (Shaub, 1950)  
 74-O ... (Alcock, 1920b); (Dept. of Mines, Top. 48)  
 74-O(East half) ... (Mawdsley, 1944)  
 74-O-5 ... (Bell, 1885)  
 74-O-7 ... (Camsell, 1916a); (Dept. of Mines, Top. 129)  
 74-O-7,8... (Mawdsley, 1949)  
 74-O-8 ... (Bruce and Matheson, 1930); (Dept. of Mines, Top. 130)  
 74-O-12 ... (Cooke, 1937a); (Cooke, 1937b); (Dept. of Mines, Top. 131); (Geol. Survey Canada, 1947c)  
 74-P ... (Dept. of Mines, Top. 49); (Furnival, 1940)  
 74-P(East half) ... (Furnival, 1941a)  
 74-P(West half) ... (Furnival, 1941b)  
 74-P-2,3,6,7... (Hriskevich, 1949)  
 74-P-3 ... (Collins and Freeman, 1951); (Lang, 1949)  
 74-P-3,4,5,6 ... (Lang, 1950)  
 74-P-3,6 .... (Allen, R. B., 1950); (Conybeare and Ferguson, 1950)  
 74-P-5..... (Johnston, R. A. A., 1915)  
 74-P-7..... (Mawdsley, 1950); (Mawdsley, 1951a); (Mawdsley, 1951b)

## Geological Maps

### AREA:

- Sask..... (Geol. Survey Canada, 1945); (Geol. Survey Canada, 1947a); (Geol. Survey Canada, 1947b); (Geol. Survey Canada, 1947d)  
 Prec. Sask. ... (Geol. Survey Canada, 1922)  
 Sed. Sask. ... (Hind, 1859); (Malcolm, 1913)  
 62 ..... (Fraser et al, 1935); (Johnston, W. A., et al, 1948); (MacKay, 1949)  
 62-E,F.. (Dawson, G. M., 1875b)  
 62-E-2..... (Ries and Keele, 1912)  
 62-F(West half)... (Johnston, W. A., 1931b)  
 62-F-3,4,5,6,11,12, 13,14 ... (Wickenden, 1945b)  
 62-K-3,4,5,12,13 ... (Wickenden, 1945b)  
 62-M,N..... (Tyrrell, 1889)  
 62-M-4,5,12,13 ... (Wickenden, 1945b)  
 63 ... (McInnes, 1913)  
 63-C,D,E,F,L,K ... (Wright, 1934)  
 63-C-4,5,12,13 ..... (Wickenden, 1945b)  
 63-D-1,2,7,8,9,10,15,16(Wickenden, 1945b)  
 63-D-9,16 ... (McLearn and Wickenden, 1936)  
 63-E,K,L,M ... (Tyrrell, 1897)



- 63-E-16..... (Dowling, 1902); (Tyrrell, 1902)  
63-F-13..... (Dowling, 1902); (Tyrrell, 1902)  
63-K-4,5..... (Dowling, 1902); (Tyrrell, 1902)  
63-K-5,12,13..... (Bruce, 1918)  
63-K-12..... (Tanton, 1941b)  
63-K-12,13..... (Alcock, 1923); (Stockwell, 1946)  
63-K-13..... (Tanton, 1941a)  
63-L-8,9,16..... (Bruce, 1918)  
63-L-9,10,15,16..... (Wright and Stockwell, 1935)  
63-L-10..... (Eastwood, 1951)  
63-L-11,12,13,14..... (DeLury, 1926)  
63-M..... (Satterly, 1932)  
63-M-1..... (Allen, C. C., 1941)  
63-N-4..... (Harrison, 1949)  
63-N-4,5..... (Wright, 1928)  
64..... (McInnes, 1913); (Tyrrell and Dowling, 1896)  
64-D(East half)..... (Alcock, 1939a)  
64-D(West half)..... (Alcock, 1939b)  
64-D,E..... (Tyrrell, 1897)  
64-D-4,5..... (Byers, 1949)  
64-E(East half)..... (Weeks, 1940a)  
64-E(West half)..... (Weeks, 1940b)  
64-E,D..... (Stockwell, 1929)  
72..... (Fraser et al, 1935); (Johnston, W. A., et al 1948); (MacKay, 1949)  
72-B-2,9..... (Ries and Keele, 1912)  
72-F(West half)..... (Furnival, 1946); (Williams et al, 1928)  
72-F,G,H..... (Dawson, G. M., 1875b)  
72-F,G,K,J..... (McConnell, 1886)  
72-F-5,6,7,10,11,12..... (Russell, 1949)  
72-F-7,10..... (McLearn, 1928)  
72-G,H..... (Rose, 1916)  
72-H-15..... (Wickenden and Graham, 1937)  
72-I-2..... (Wickenden and Graham, 1937)  
72-K(West half)..... (Williams et al, 1928)  
72-N(West half)..... (Wickenden, 1945a); (Williams et al, 1928)  
73..... (McInnes, 1913)  
73-C(East half)..... (Hume, 1939a)  
73-C(West half)..... (Hume, 1939b)  
73-C-9,10,15,16..... (Hume and Hage, 1936)  
73-C-13..... (Hume and Hage, 1941)  
73-F(East half)..... (Geol. Survey Canada, 1939a)  
73-F(West half)..... (Geol. Survey Canada, 1939b)  
73-F-1,2..... (Hume and Hage, 1936)  
73-F-4,5..... (Hume and Hage, 1940); (Hume and Hage, 1941); (Wickenden, 1948b)  
73-H-4..... (Ries and Keele, 1912)  
73-I-9,10,15,16..... (DeLury, 1926)  
73-N,O,P..... (Tyrrell and Dowling, 1896)  
73-O..... (Frarey, 1950)  
73-P(East half)..... (McLarty, 1936b)  
73-P(West half)..... (McLarty, 1936a)  
73-P-7..... (Keith, 1941)  
74..... (McInnes, 1913); (Tyrrell and Dowling, 1896)  
74-A,B,G,H..... (Rice, 1950)  
74-A-1..... (Miller, M. L., 1949)  
74-A(East half)..... (McMurchy, 1938a)  
74-A(West half)..... (McMurchy, 1938b)

- 74-A-7 . . . . . (Mawdsley, 1946)  
 74-B . . . . . (Alcock, 1935b); (Sproule, 1938a)  
 74-B(East half) . . . . . (Alcock et al, 1941)  
 74-B(West half) . . . . . (Sproule and Downie, 1941b)  
 74-F(East half) . . . . . (Sproule et al, 1941)  
 74-G . . . . . (Sproule, 1938b)  
 74-G(East half) . . . . . (Sproule, 1941)  
 74-G(West half) . . . . . (Sproule and Downie, 1941a)  
 74-K,J,N,O . . . . . (Alcock and Camsell, 1916)  
 74-K,N . . . . . (Camsell, 1916b)  
 74-N . . . . . (Alcock, 1936a)  
 74-N-7,8,9,10 . . . . . (Christie and Kesten, 1949a); (Cooke, 1937a)  
 74-N-8 . . . . . (Jolliffe, 1946)  
 74-N-8,9 . . . . . (Blake, 1951)  
 74-O . . . . . (Alcock, 1936a)  
 74-O-7,8 . . . . . (Mawdsley, 1949)  
 74-O-12 . . . . . (Cooke, 1937a)  
 74-P . . . . . (Alcock, 1936a)  
 74-P(East half) . . . . . (Furnival, 1941a)  
 74-P(West half) . . . . . (Furnival, 1941b)  
 74-P-7 . . . . . (Mawdsley, 1950); (Mawdsley, 1951a)  
 74-P-7,8 . . . . . (Mawdsley, and Grout 1951)

## Glacial Geology

(See also. Historical geology, Quaternary)

### DRIFTLESS AREA:

- 72-G,H . . . . . (Wickenden, 1931a)

### DRUMLINS:

- 74 . . . . . (Tyrrell, 1893b)  
 74-B,F,G . . . . . (Sproule, 1939)

### ESKERS:

- 74 . . . . . (Tyrrell, 1893b)

### GLACIAL FEATURES CREE LAKE:

- 74-B,F,G . . . . . (Sproule, 1939)

### GLACIAL FEATURES CYPRESS HILLS:

- 72-F . . . . . (Williams, M. Y., 1929)

### GLACIAL FEATURES, GENERAL:

- Sask. . . . . (Flint, 1945)  
 Sed. Sask. . . . . (Edmunds, 1947); (Tyrrell, 1890)

### GLACIAL FEATURES, LAKE ATHABASKA:

- 74-N,O . . . . . (Alcock, 1920c)

### GLACIAL LAKE AGASSIZ:

- Sask. . . . . (Johnston, W. A., 1916); (Uphan, 1895)  
 Sed. Sask. . . . . (Uphan, 1890)  
 63-D,E . . . . . (Johnston, W. A., 1946)  
 63-L,M . . . . . (McInnes, 1913)  
 63-M,N . . . . . (Tyrrell, 1889)

### GLACIAL LAKE ASSINIBOINE:

- 62-M,N . . . . . (Tyrrell, 1889)

## GLACIAL LAKES, GENERAL:

Sed. Sask. .... (Johnston, W. A., and Wickenden, 1931b)

## GLACIAL LAKE REGINA:

62-E . . . . . (Johnston, W. A., and Wickenden, 1930)

72-H,I,J,O..... (Johnston, W. A., and Wickenden, 1930)

72-I. . . . . (Simpson, 1930)

## GLACIAL LAKE SOURIS:

62-E,F. . . . . (Dowling, 1903)

## GLACIAL STRIAE:

Prec. Sask. . . . . (McInnes, 1913)

74 . . . . . (Tyrrell and Dowling, 1896)

74-N,O . . . . . (Alcock, 1920c)

## KAMES:

74 . . . . . (Tyrrell, 1893b)-

## MORAINES:

Sed. Sask. .... (Johnston, W. A., and Wickenden, 1930); (Tyrrell, 1890)

72 . . . . . (Wickenden, 1937)

72-F,G,H . . . . . (Alden, 1932)

72-H,I,J,O..... (Johnston, W. A., and Wickenden, 1930)

74 . . . . . (Tyrrell, 1893b)

74-B,F,G..... (Sproule, 1939)

## RETREAT OF ICE:

Sed. Sask. .... (Edmunds, 1940b)

## VARVED CLAYS:

72-I-7 . . . . . (Edmunds, 1929)

72-K-10. .... (Edmunds, 1929)

72-O-12.... . (Edmunds, 1929)

# Historical Geology

## AGE DETERMINATIONS:

74-N-10 . . . . . (Collins and Freeman, 1951)

74-P-3 . . . . . (Collins and Freeman, 1951)

## AMISK SERIES:

63-K-5;12,13 . . . . . (Bruce, 1914)

63-K-12 . . . . . (Harrison, 1951b)

63-K-12,13 . . . . . (Alcock, 1923); (Stockwell, 1946)

63-K-13 . . . . . (Alcock, 1935a)

63-L(NW) . . . . . (Bruce, 1918)

63-L-8,9,16 . . . . . (Bruce, 1914)

63-L-9 . . . . . (Harrison, 1951b)

63-L-10 . . . . . (Eastwood, 1951)

## ATHABASKA SERIES:

Prec. Sask. . . . . (Mawdsley, 1934a)

74 . . . . . (Alcock, 1920a); (McInnes, 1913); (Mawdsley, 1944); (Sproule, 1951); (Tyrrell and Dowling, 1896)

74-G . . . . . (Sproule, 1938b)

74-K,N . . . . . (Camsell, 1916b)

74-N . . . . . (Alcock, 1915)

- 74-N,O . . . . . (Alcock, 1920c)  
 74-N,O,P . . . . . (Alcock, 1936a)  
 74-N-7,8,9,10 . . . . . (Alcock, 1917); (Anonymous, 1947c); (Christie and Kesten, 1949a); (James et al, 1950).  
 74-N-8 . . . . . (Alcock, 1936b); (Allan and Cameron, 1923)  
 74-N-9,10 . . . . . (Allen, R. B., 1950); (Dawson, K. R., 1951)  
 74-N-10 . . . . . (Conybeare, 1949a)  
 74-O-7,8 . . . . . (Mawdsley, 1949)  
 74-P . . . . . (Furnival, 1940)  
 74-P-2,3,6,7 . . . . . (Hriskevich, 1949)  
 74-P-3,6 . . . . . (Allen, R. B., 1950)

#### BEAVERLODGE SERIES:

- 74-N . . . . . (Alcock, 1936a)  
 74-N-7,8,9,10 . . . . . (Anonymous, 1947c); (James et al, 1950)  
 74-N-8 . . . . . (Alcock, 1936b); (Jolliffe, 1946); (Lang, 1949)  
 74-N-10 . . . . . (Conybeare, 1949b)

#### CAMBRIAN:

- Sed. Sask. . . . . (Geol. Survey Canada, 1947c); (Sloss, 1950); (Webb, 1951)

#### CRETACEOUS:

- Sed. Sask. . . . . (Billings, 1859); (Clapp, 1915); (Dawson, S. J., 1859); (Dowling, 1915b); (Edmunds, 1929); (Edmunds, 1937); (Edmunds, 1944a); (Edmunds, 1944b); (Edmunds, 1945a); (Edmunds, 1947); (Geol. Assoc. Canada, 1950); (Geol. Survey Canada, 1947c); (Hastings, 1929); (Hector, 1861b); (Hector, 1863); (Hind, 1859); (Hume, 1933); (McLearn, 1932); (McLearn, 1944a); (McLearn, 1944b); (Meek, 1859); (Russell, 1939); (Warren, 1935); (Webb, 1951); (Wickenden, 1932a); (Wickenden, 1932b); (Wickenden, 1951); (Worcester, 1950)  
 62 . . . . . (Davis, 1918); (Dawson, G. M., 1881); (Dowling et al, 1919); (Dyer, 1927); (Fraser, 1934b); (Fraser et al, 1935); (Keele, 1912); (McLearn and McMahon, 1934); (Warren, 1930); (Wickenden, 1935); (Worcester, 1937b)  
 62-E,F . . . . . (Dawson, G. M., 1875b); (McLean, 1917)  
 62-E-2 . . . . . (Ries and Keele, 1912)  
 62-F-3,4,5,6,11,12,13,14 . . . . . (Wickenden, 1945b)  
 62-K-3,4,5,12,13 . . . . . (Wickenden, 1945b)  
 62-L . . . . . (Edmunds, 1940a)  
 62-L-12 . . . . . (Ries and Keele, 1913)  
 62-L-13 . . . . . (Tyrrell, 1893a)  
 62-M,N . . . . . (Tyrrell, 1889)  
 62-M-4,5,12,13 . . . . . (Tyrrell, 1893a)  
 62-M-12 . . . . . (Hume and Ignatieff, 1950)  
 62-M-13 . . . . . (Hoffman, 1877)  
 62-N . . . . . (Bell, 1876); (Whiteaves, 1889)  
 62-N-4,5,12,13 . . . . . (Wickenden, 1945b)  
 62-N-12 . . . . . (Edmunds, 1938)  
 62-N-13 . . . . . (Selwyn, 1877)  
 62-P-6 . . . . . (Edmunds, 1943b); (Edmunds, 1945b)  
 63-C-4,5,12,13 . . . . . (Wickenden, 1945b)  
 63-C-13 . . . . . (Worcester, 1943b)  
 63-D-1,2,7,8,9,10,15,16 . . . . . (Wickenden, 1945b)  
 63-D-4 . . . . . (McLearn and Wickenden, 1937)  
 63-D-4,5,12,13 . . . . . (Tyrrell, 1893a)  
 63-D-9,16 . . . . . (McLearn and Wickenden, 1936)  
 63-E . . . . . (Ells, S. C., 1923); (McInnes, 1908) (McInnes, 1913); (Malcolm, 1913); (Wallace, 1921b)

- 63-E-8,9... (Spence, 1924)
- 63-L... (McInnes, 1911)
- 64-N,O,P... (Tyrrell, and Dowling, 1896)
- 72... (Allan, 1918); (Davis, 1918); (Dawson, G. M., 1881); (Dowling, 1914); (Dowling et al, 1919); (Dyer, 1927); (Fraser, 1934a); (Fraser, 1934b); (Fraser et al, 1935); (Keele, 1912); (McLearn and McMahon, 1934); (Malcolm, 1913); (Warren, 1930); (Warren, 1934); (Whiteaves, 1885); (Wickenden, 1935); (Worcester, 1937b)
- 72-F... (Berry, 1930); (Dawson, Sir J. W., 1888); (Hamelin, 1931); (Malcolm, 1913); (Russell, 1947); (Russell, 1950a); (Williams, M. Y., 1932); (Williams and Dyer, 1930)
- 72-F(West half)... (Furnival, 1946)
- 72-F,G... (Hoffman, 1886); (McLearn, 1929); (Russell, 1930)
- 72-F,G,H... (Berry, 1935); (Dawson, G. M., 1875b); (Hutt, 1930)
- 72-F,G,K,J... (McConnell, 1886)
- 72-F-3,4,5,6... (Furnival, 1941c)
- 72-F-3,4,5,6,11,12,13,14... (Furnival, 1942)
- 72-F-4... (Cushman, 1927); (Dowling, 1921a); (Furnival, 1946); (Sheppard, 1921)
- 72-F-5,6,7,10,11,12... (Russell, 1949)
- 72-F-5,7... (Spence, 1924)
- 72-F-6... (Robinson, H. R., 1945)
- 72-F-6,10... (Davis, 1916); (Ries and Keele, 1913); (Russell, 1940c); (Russell, 1943b)
- 72-F-7,10... (McLearn, 1928)
- 72-F-10... (Keele, 1915)
- 72-F-10,11... (Sternberg, 1924)
- 72-F-13... (Douglas, 1942); (Furnival, 1946)
- 72-F-14... (Dowling, 1915a)
- 72-G,H... (Rose, 1916)
- 72-G-1,2... (Cope, 1875); (Sternberg, 1924)
- 72-G-2... (Russell, 1934a); (Sternberg, 1926)
- 72-G-8... (Davis, 1916)
- 72-H... (Houldsworth, 1941)
- 72-H-2,6,8,9,12,13... (Keele, 1915)
- 72-H-3,4,5,6... (McLearn, 1930); (McLearn, 1931)
- 72-H-3,12... (Russell, 1932)
- 72-H-4,7,10,11... (Hogg, 1950)
- 72-H-9... (Ries and Keele, 1913)
- 72-H-12,13... (Davis, 1916)
- 72-H-14... (Dowling, 1909)
- 72-H-15... (Wickenden and Graham, 1937)
- 72-I... (Simpson, 1930)
- 72-I-2... (Hogg, 1950); (Wickenden and Graham, 1937)
- 72-I-3... (Davis, 1916); (Ries and Keele, 1912)
- 72-I-3,7,15... (Ries and Keele, 1913)
- 72-I-3,15... (Ries and Keele, 1913)
- 72-I-5,6... (Johnston, W. A., and Wickenden, 1931a)
- 72-I-15... (Dowling, 1915a); (Malcolm, 1913)
- 72-J-4,10,15... (Hogg, 1915)
- 72-J-5... (Cole, 1924c)
- 72-J-5,6,11,12,13,14... (Maddox, 1933)
- 72-J-5,8... (Keele, 1915)
- 72-J-11... (Cushman, 1927)
- 72-J-12... (Weston, 1899)
- 72-J-15... (Warren, 1927)
- 72-K-14... (Wickenden, 1948a)

- 72-K-15 . . . . . (Davis, 1917)  
 72-N (West half) . . . . . (Wickenden, 1945a)  
 72-N-7 . . . . . (Dowling, 1912)  
 72-N-7,14 . . . . . (Dowling, 1915a)  
 72-N-9 . . . . . (Dowling, 1909)  
 72-O-1,2,3,4,7,8,9,10 . . . . . (Maddox, 1933)  
 72-O-2 . . . . . (Hector, 1859); (Hector, 1861b); (Hector, 1863); (Keele, 1915)  
 72-O-8 . . . . . (Hogg, 1950)  
 72-O-15 . . . . . (Edmunds, 1939b); (Warren, 1937)  
 73 . . . . . (Allan, 1918); (Dowling et al, 1919)  
 73-C . . . . . (Wickenden, 1951)  
 73-C-4,6 . . . . . (Dowling, 1915a)  
 73-C-6 . . . . . (Hogg, 1950); (Hume and Ignatieff, 1950)  
 73-C-9,10,15,16 . . . . . (Hume and Hage, 1936)  
 73-C-13 . . . . . (Hume, 1926)  
 73-F-4,5 . . . . . (Edmunds, 1948); (Hume and Hage, 1940); (Hume and Ignatieff, 1950); (Johnston, W. A., 1934); (Wickenden, 1941); (Wickenden, 1948b)  
 73-F-5 . . . . . (Edmunds, 1940c)  
 73-F-11 . . . . . (Edmunds, 1939c)  
 73-F-12 . . . . . (Edmunds, 1939a)  
 73-I . . . . . (McInnes, 1913)  
 73-I-9,10,15,16 . . . . . (DeLury, 1926)  
 73-I-15,16 . . . . . (McInnes, 1910); (Wallace and McCartney, 1928)  
 73-I-16 . . . . . (Cole, 1928)  
 73-J-14 . . . . . (Malcolm, 1913)

#### DEVONIAN:

- Sed. Sask. . . . . (Clapp, 1915); (Cole, 1948); (Dowling, 1920a); (Geol. Survey Canada, 1947c); (Sloss, 1950); (Webb, 1951)  
 62-P-6 . . . . . (Edmunds, 1945b)  
 72 . . . . . (Andrichuk, 1951)  
 73 . . . . . (Malcolm, 1913)  
 73-I-15 . . . . . (McInnes, 1910); (McInnes, 1913)  
 74 . . . . . (Malcolm, 1913)

#### GEOLOGICAL HISTORY LOWER CRETACEOUS:

- Sed. Sask. . . . . (McLearn, 1944b)

#### GEOLOGICAL HISTORY PREC. SHIELD:

- (Geol. Survey Canada, 1947c)

#### JURASSIC:

- Sed. Saskatchewan . . . . . (Edmunds, 1944a); (Edmunds, 1947); (Geol. Survey Canada, 1947c); (Webb, 1951); (Wickenden, 1952b)  
 62 . . . . . (Fraser et al, 1935)  
 72 . . . . . (Fraser et al, 1935)  
 72-F-4 . . . . . (Furnival, 1946); (Wickenden, 1933)  
 72-F-13 . . . . . (Furnival, 1946)  
 72-I-3 . . . . . (Wickenden, and Graham, 1937)  
 73-I-15 . . . . . (Wickenden, 1933)

#### KAMINIS GRANITE:

- 63-L(NW) . . . . . (Bruce, 1918)

#### KISSEYNEW COMPLEX:

- 63-K-12,13 . . . . . (Harrison, 1951a)  
 63-K-13 . . . . . (Alcock, 1935a); (Kerr, 1938)  
 63-L(NW) . . . . . (Bruce, 1918)  
 63-L-9,16 . . . . . (Harrison, 1951a)

- 63-N-4,5..... (Wright, 1928)  
 73-A-7 .. (Bruce and Matheson, 1930)  
 73-P-8,15..... (Bruce and Matheson, 1930)  
 74-O-8 .. (Bruce and Matheson, 1930)

#### LAC LA RONGE SERIES:

- 73-P-1,2,3,6,7,8..... (McInnes, 1910)

#### LA RONGE GROUP:

- 73-P-7,8 .. (Mawdsley and Groult, 1951)

#### MESOZOIC:

- Sed. Sask..... (Link, 1950)

#### MISSI SERIES:

- 63-K,L..... (Alcock, 1924)  
 63-K-5,12,13..... (Bruce, 1914)  
 63-K-12 .. (Harrison, 1951b)  
 63-K-12,13..... (Alcock, 1923); (Ambrose, 1936b); (Stockwell, 1946)  
 63-K-13..... (Alcock, 1935a); (Ambrose, 1936a); (Brownell and Kinkel, 1935); (Kerr, 1938)  
 63-L(NW)..... (Bruce, 1918)  
 63-L-8,9,16..... (Bruce, 1914)  
 63-L-9..... (Harrison, 1951b); (Tanton, 1950)  
 63-L-9,16..... (Ambrose, 1936b); (Wright, 1933)  
 63-L-10,15..... (Wright and Stockwell, 1934b)

#### MISSISSIPPIAN:

- Sed. Sask..... (Geol. Survey Canada, 1947c); (Sloss, 1950); (Webb, 1951)

#### ORDOVICIAN:

- Sed. Sask..... (Clapp, 1915); (Geol. Survey Canada, 1947c); (Sloss, 1950); (Webb, 1951)  
 63 .. (Malcolm, 1913)  
 63-E,L .. (McInnes, 1913)  
 63-K,L .. (Tyrrell, 1897)  
 63-K-4 .. (Whiteaves, 1897a)  
 63-K-4,5 .. (Dowling, 1902); (Tyrrell, 1902)  
 63-L .. (Bell, 1881); (McInnes, 1911); (Richardson, 1823)  
 63-L(NW)..... (Bruce, 1918)  
 63-L-9,16 .. (Wright, 1933)  
 63-L-10,15 .. (Wright and Stockwell, 1934b)  
 63-L-11,12,13,14 .. (DeLury, 1926)  
 74-O-5 .. (Bell, 1885)

#### PALEOZOIC:

- Sed. Sask. .... (Edmunds, 1944a); (Edmunds, 1947); (Hume, 1933); (Link, 1950); (Wickenden, 1932b)  
 62 .. (Fraser et al, 1935)  
 63-L-10 .. (Eastwood, 1951)  
 72 .. (Fraser et al, 1935)  
 73-C-11 .. (Anonymous, 1947a)

#### POST ATHABASKA INTRUSIONS:

- 74-N-7,8,9,10..... (Christie and Kesten, 1949a)

#### POST BEAVERLODGE SERIES:

- 74-N,O,P .. (Alcock, 1936a)

#### POST MISSI INTRUSIVES:

- 63-L-9..... (Tanton, 1940)

## POST TAZIN:

74-N,O,P.....(Alcock, 1936a)

## POST WEKUSKO:

73-P-7.....(Keith, 1941)

## QUATERNARY: (See also Glacial geology)

Sask.....(Upham, 1895)

(Flint, 1945)

Sed. Sask.....(Dawson, G. M., 1875a); (Dept. of Soils, 1936); (Edmunds, 1929); (Edmunds, 1940b); (Edmunds, 1947); (Geol. Survey Canada, 1947c); (Goudge, 1933); (Hector, 1861b); (Hector, 1863); (Mitchell et al, 1944); (Mitchell et al, 1950); (Rawson and Moore, 1944); (Tyrrell, 1890); (Upham, 1890)

62.....(Davis, 1918); (Fraser et al, 1935); (Hector, 1859); (Hector, 1861b); (Hector, 1863); (Johnston, W. A., 1931a); (Johnston, W. A., et al, 1948); (Warren, 1930)

62-E.....(Johnston, W. A. and Wickenden, 1930); (Williams and Dyre, 1930)

62-E,F.....(Dawson, G. M., 1875b); (Dowling, 1903)

62-E,L.....(Stansfield, 1918); (Stansfield, 1919)

62-E-1,2,7,8.....(Dept. of Soils, 1926b)

62-E-3,6,12.....(Dowling, 1919)

62-E-12,13.....(Dept. of Soils, 1926a)

62-L-6,7,12.....(Davis, 1917)

62-M,N.....(Tyrrell, 1889)

62-N.....(Bell, 1876)

63-E.....(McInnes, 1908); (McInnes, 1909)

63-E,L.....(Goudge, 1945)

63-I.....(McInnes, 1911)

63-L(NW Cor.).....(Bruce, 1918)

63-L-10.....(Eastwood, 1951)

63-L-10,15.....(Wright and Stockwell, 1934b)

63-L-11,12,13,14.....(DeLury, 1926)

63-M.....(Satterly, 1932)

72.....(Davis, 1918); (Fraser et al, 1935); (Hector, 1859); (Hector, 1861b); (Hector, 1863); (Johnston, W. A., 1931a); (Johnston, W. A. et al, 1948); (Wickenden, 1937); (Williams and Dyer, 1930)

72-B-2,9.....(Ries and Keele, 1912)

72-F,G,H.....(Alden, 1924); (Dawson, G. M., 1875b)

72-F,G,J,K.....(Dept. of Soils, 1931)

72-F-3,4,5,6.....(Dept. of Soils, 1925)

72-F-9.....(Russell, 1934b)

72-G,H.....(Rose, 1916); (Wickenden, 1931a)

72-G-8.....(Russell, 1934b)

72-H,I,J,O.....(Johnston, W. A. and Wickenden, 1930)

72-H,J.....(Wickenden, 1931b)

72-H-1.....(Mozley, 1932); (Russell, 1934b)

72-H-9,15.....(Dept. of Soils, 1926a)

72-H-15.....(Wickenden and Graham, 1937)

72-H-16.....(Dowling, 1919)

72-I.....(Simpson, 1930)

72-I,J.....(Stansfield, 1918); (Stansfield, 1919)

72-I-2.....(Dowling, 1919); (Wickenden and Graham, 1937)

72-I-3,4,5,6.....(Dept. of Soils, 1923a)

72-I-4,5.....(Mitchell et al, 1942)

72-I-5.....(Goudge, 1945); (Ries and Keele, 1912)

72-I-5,6.....(Johnston, W. A. and Wickenden, 1931a)

72-I-5,7,8,9,10,11.....(Reinecke, 1919)



- 72-I-7.....(Davis, 1917); (Ries and Keele, 1913)  
 72-J-1.....(Russell, 1934b)  
 72-J-1,2,7,8.....(Mitchell et al, 1942)  
 72-J-4,8,12.....(Dept. of Soils, 1923b)  
 72-J-5.....(Cole, 1924c)  
 72-K.....(Cole, 1928); (Dept. of Soils, 1929); (Edmunds, 1929)  
 72-K-1,8,9.....(Dept. of Soils, 1923b)  
 72-N-8,9,16.....(Dept. of Soils, 1927)  
 72-N-12.....(Keele, 1915)  
 72-O-2.....(Chalmers, 1906a)  
 72-O-3.....(Davis, 1917)  
 72-O-5,12,13.....(Dept. of Soils, 1927)  
 72-O-12.....(Baker, 1934); (Russell, 1934b)  
 72-O-15.....(Parks, 1925)  
 72-O-16.....(Edmunds, et al 1938)  
 72-P-5.....(Keele, 1915)  
 72-P-11,13.....(Goudge, 1945)  
 73.....(Hector, 1859); (Hector, 1861D); (Hector, 1863)  
 73-A-1.....(Mozley, 1932)  
 73-A-5.....(Keele, 1915)  
 73-A-10,11,14,15.....(Dept. of Soils, 1928)  
 73-A-12.....(Goudge, 1945)  
 73-B-2.....(Goudge, 1945); (Keele, 1915); (Parks, 1916); (Ries and  
 Keele, 1913); (Russell, 1941); (Russell, 1943a)  
 73-B-15.....(Ells, R. W., 1877)  
 73-F-12.....(Edmunds, 1939a)  
 73-H-2,3.....(Dept. of Soils, 1928)  
 73-H-4.....(Parks, 1916); (Ries and Keele, 1912)  
 73-I-9,10,15,16.....(DeLury, 1926)  
 73-I-15,16.....(McInnes, 1910)  
 73-P-1,2,3,6,7,8.....(McInnes, 1910)  
 74.....(Tyrrell, 1893b); (Tyrrell and Dowling, 1896)  
 74-B,F,G.....(Sproule, 1939)  
 74-K,N.....(Camsell, 1916b)  
 74-O-7,8.....(Mawdsley, 1949)  
 74-P-7.....(Mawdsley, 1950)

#### SILURIAN:

- Sed. Sask.....(Clapp, 1915); (Geol. Survey Canada, 1947c); (Sloss, 1950);  
 (Webb, 1951)  
 63.....(Malcolm, 1913)  
 63-E.....(McInnes, 1913); (Richardson, 1823)  
 63-E-16.....(Tyrrell, 1902); (Whiteaves, 1906)  
 63-K-4,5.....(Dowling, 1902)  
 63-L.....(Bell, 1881); (McInnes, 1911); (Richardson, 1823); (Tyrrell,  
 1897)

#### TAZIN GROUP:

- 74-K,N.....(Camsell, 1916b)  
 74-N.....(Alcock, 1915)  
 74-N,O,P.....(Alcock, 1936a)  
 74-N-7,8,9,10.....(Alcock, 1917); (Anonymous, 1947c); (Christie and Kesten,  
 1949a); (James et al, 1950)  
 74-N-8.....(Alcock, 1936b); (Allan and Cameron, 1923); (Jolliffe, 1946)  
 74-N-8,9.....(Blake, 1951)  
 74-N-9.....(Cameron, 1935)  
 74-N-9,10.....(Allen, R. B., 1950); (Dawson, K. R., 1951)  
 74-N-10.....(Conybeare, 1949b)  
 74-O-7,8.....(Mawdsley, 1949)

- 74-P ..... (Furnival, 1940)  
 74-P-2,3,6,7 ..... (Hriskevich, 1949)  
 74-P-3,6 ..... (Allen, R. B., 1950)  
 74-P-7 ..... (Mawdsley, 1950)

### TERTIARY:

- Sed. Sask. .... (Billings, 1859); (Clapp, 1915); (Dawson, S. J., 1859)  
 (Edmunds, 1947); (Geol. Survey Canada, 1947c); (Hastings,  
 1929); (Hector, 1861b); (Hector, 1863); (Worcester, 1950)  
 62 ..... (Dawson, G. M., 1881); (Fraser, 1934b); (Fraser et al, 1935);  
 (McLearn and McMahon, 1934); (Wickenden, 1935); (Wood  
 2nd et al, 1941); (Worcester, 1937b)  
 62-E ..... (Dawson, Sir J. W., 1886); (Dawson, Sir J. W., 1888);  
 (McLean, 1918); (McLean, 1921); (Russell, 1932); (Selwyn,  
 1881)  
 62-E,F ..... (Dawson, G. M., 1875b); (McLean, 1917)  
 62-E-2. .... (Dawson, G. M., 1874); (Dawson, G. M., 1875c); (Dawson,  
 Sir J. W., 1881); (Dowling, 1904); (Dowling, 1915a); (Dowling,  
 1921b); (Hector, 1859); (Hector, 1861b); (Hector, 1863);  
 (Parks, 1916); (Penhallow, 1903); (Penhallow, 1908); (Porter  
 et al, 1912); (Ries, 1911a); (Stansfield and Nicolls, 1918);  
 (Wallace and McCartney, 1928); (Whiteaves, 1885)  
 62-E-2,3. .... (Davis, 1917)  
 62-E-3. .... (Davis, 1916)  
 72 ..... (Collier and Thom, 1918); (Davis, 1918); (Dawson, G. M.,  
 1881); (Dowling, 1914); (Fraser, 1934b); (Fraser et al, 1935);  
 (McLearn and McMahon, 1934); (Wickenden, 1935); (Wood  
 2nd et al, 1941)  
 72-F ..... (Alden, 1924); (Alden, 1932); (Berry, 1930); (Cope, 1891);  
 (Russell, 1938); (Russell, 1940b); (Russell, 1947); (Russell,  
 1950a); (Williams, M. Y., 1932); (Williams and Dyer, 1930)  
 72-F, G ..... (McLearn, 1929)  
 72-F, G, H ..... (Berry, 1935); (Dawson, G. M., 1875b); (Dowling, 1915a);  
 (Russell, 1932)  
 72-F, G, K, J ..... (McConnell, 1886)  
 72-F-5,6,7,10,11,12. .... (Russell, 1949)  
 72-F-7,10 ..... (McLearn, 1928)  
 72-F-10 ..... (Ami, 1891); (Cope, 1885a); (Cope, 1886); (Cope, 1889a);  
 (Cope, 1889b); (Cope, 1891); (Lambe, 1905a); (Lambe, 1905c);  
 (Russell, 1934c); (Russell, 1936); (Russell, 1940a); (Russell,  
 1950b); (Weston, 1895)  
 72-F-10,15 ..... (Lambe, 1905b); (Lambe, 1908)  
 72-F-11,12 ..... (Furnival, 1946)  
 72-G, H ..... (Rose, 1916); (Russell, 1950b); (Selwyn, 1881)  
 72-G-1,2,3,6,7,8 ..... (Rose, 1915)  
 72-G-7,8. .... (Stansfield and Nicolls, 1918)  
 72-G-8 ..... (Sternberg, 1930)  
 72-G-13 ..... (Davis, 1917)  
 72-H. .... (Houldsworth, 1941)  
 72-H-2 ..... (Brown and Houldsworth, 1939); (Russell, 1934a)  
 72-H-2,3,4 ..... (Dawson, G. M., 1874)  
 72-H-2,3,4,5,6,7,10,  
 11,12. .... (Rose, 1914)  
 72-H-3,4. .... (Dawson, Sir J. W., 1875); (Penhallow, 1908)  
 72-H-3,4,5,6. .... (McLearn, 1930); (McLearn, 1931)  
 72-H-5 ..... (Stansfield and Nicolls, 1918); (Sternberg, 1932)  
 72-H-14 ..... (Wilson, 1912)  
 72-I-3. .... (Stansfield, 1922)  
 72-J-5. .... (Russell, 1950b); (Russell and Wickenden, 1933)

### WEKUSKO GROUP:

- 63-K-12 ..... (Harrison, 1951b)  
 63-K-13 ..... (Alcock, 1935a)

63-L-9..... (Harrison, 1951b)  
 63-L-9,16..... (Wright, 1933)  
 63-L-10,15..... (Wright and Stockwell, 1934b)  
 64-D..... (Alcock, 1938)  
 73-P-6,7..... (Mawdsley, 1940)  
 73-P-7..... (Keith, 1941)  
 74-B..... (Sproule, 1938a)

## WELL LOGS:

Sed. Sask..... (Anonymous, 1951)  
 62-K-3..... (Wickenden, 1945b)  
 62-N-12..... (Clapp, 1915)  
 62-N-12,13..... (Dowling et al, 1919)  
 62-N-12..... (Edmunds, 1938); (Wickenden, 1945b)  
 62-N-13..... (Selwyn, 1877)  
 62-P-6..... (Edmunds, 1945b)  
 63-D-7,10..... (Wickenden, 1945b)  
 63-D-16..... (Wickenden, 1945b)  
 72-F-4..... (Hume, 1933); (Wickenden, 1932b)  
 72-F-4,13..... (Furnival, 1946)  
 72-F-14..... (Dowling et al, 1919)  
 72-I-2,5,6,7..... (Dowling et al, 1919)  
 72-I-2,5,6,9..... (Clapp, 1915)  
 72-I-2,6,7..... (Malcolm, 1913)  
 72-I-5..... (Wickenden, 1932b)  
 72-I-5,8..... (Hume, 1933)  
 72-J-6..... (Wickenden, 1932b)  
 72-J-6,15..... (Hume, 1933)  
 72-J-16..... (Dowling et al, 1919)  
 72-K-9..... (Clapp, 1915); (Warren, 1930)  
 72-N-9,13..... (Hume, 1933)  
 72-N-13..... (Dowling et al, 1919)  
 72-O-6,9,15..... (Hume, 1933)  
 72-O-9,15..... (Warren, 1930)  
 72-O-15..... (Edmunds, 1939b)  
 72-P-6..... (Edmunds, 1937); (Hume, 1933); (Warren, 1930); (Wickenden, 1932b)  
 73-B-7..... (Dowling et al, 1919); (Malcolm, 1913)  
 73-B-15..... (Ells, R. W., 1877)  
 73-C-6..... (Hume, 1933); (Wickenden, 1932b)  
 73-C-11..... (Anonymous, 1947a)  
 73-F-4,5..... (Hume and Hage, 1940)  
 73-F-5..... (Edmunds, 1940c); (Hume, 1933); (Wickenden, 1941)  
 73-F-11..... (Edmunds, 1939c)

## Hydro Geology

### ARTESIAN WATER:

72-I..... (Simpson, 1930)  
 72-J-9..... (Johnston, W. A., and Wickenden, 1931a)  
 72-J-9,10,15,16..... (Maddox, 1932)

### OIL FIELD WATERS:

Sed. Sask..... (Campbell, 1929)  
 73-B-2..... (Campbell, 1929)

73-C-5. . . . .(Rutherford, 1924)

Sed. Sask. . . . . (Edmunds, 1947); (Geol. Survey Canada, 1936 and 1947);  
 (Johnston, W. A., 1932)  
 62-E, L . . . . . (Stansfield, 1918); (Stansfield, 1919)  
 63-D-9, 16 . . . . . (McLearn and Wickenden, 1936)  
 72-I . . . . . (Simpson, 1930)  
 72-I, J . . . . . (Stansfield, 1918); (Stansfield, 1919)  
 72-I-5, 6 . . . . . (Johnston, W. A., and Wickenden, 1931a)

**METAMORPHISM MISSI SERIES:**

63-K-13 ... (Ambrose, 1936a)

740. . . . (Alcock, 1920b)

63-K-13 . . . . . (Brownell and Kinkel, 1935)

62 (Fraser, 1934b); (Fraser et al, 1935)  
62-E-2 (Wallace and McCartney, 1928)  
72 (Fraser, 1934a); (Fraser, 1934b); (Fraser et al, 1935)  
72-F,G (Fraser, 1929)  
72-F-7,10 (Fraser, 1928)  
72-H-3,4,5,6 (Fraser, 1930)  
73-I-15,16 (Wallace and McCartney, 1928)

74-N ..... (Brooker and Nuffield, 1951)  
72-N-7,8,9,10<sup>e</sup> ..... (Conybeare and Campbell, 1951); (Kerr, P. F., 1950);  
..... (Robinson, S. C., 1950)  
74-N-9,10 ..... (Conybeare and Ferguson, 1950)  
74-N-10 ..... (Collins and Freeman, 1951)  
74-P-3 ..... (Collins and Freeman, 1951)  
74-P-3,6 ..... (Conybeare and Ferguson, 1950)

72-I-3 ... .. (Stansfield, 1922)

74-N-9.10 . . . . . (Dawson; K. R., 1951); (Kerr, P. F., 1950)

### ACTINOSEPIA CANADENSIS:

72-J-12 . . . . . (Whiteaves, 1897b)

## 72-F46 .. (Robinson, H. R., 1945)

72-F-10.....(Russell, 1940a)

72-H/5 ...3. .... (Sternberg, 1932)

## DINOSAURS:

- 72-F,G. . . . . (Russell, 1930)  
72-F-1,2. . . . . (Sternberg, 1924)  
72-G-1,2. . . . . (Cope, 1875)

## EARLY MAN:

- 72-O-16 . . . . . (Edmunds et al, 1938)

## EQUUS SP:-

- 72-F-15, . . . . . (Lambe, 1915c)  
73-B-2 . . . . . (Russell, 1941); (Russell, 1943a)

## FORAMINIFERA:

- Sed. Sask. . . . . (Wickenden, 1932a)  
72-F-4 . . . . . (Cushman, 1927); (Wickenden, 1933)  
72-I-5 . . . . . (Wickenden, 1933)  
72-J-11 . . . . . (Cushman, 1927)  
72-K-14 . . . . . (Wickenden, 1948a)

## GYRAULUS CYCLOSTOMUS:

- 72-O-12 . . . . . (Baker, 1934)

## HEMIPSALODON GRANDIS:

- 72-F. . . . . (Russell, 1938)  
72-F-10. . . . . (Cope, 1885a)

## HESPERORHYNCHIA SUPERBA:

- 72-O-15 . . . . . (Warren, 1937)

## HYRACODON PRISCIDENS:

- 72-F-10 . . . . . (Lambe, 1905a)

## INOCERAMUS:

- 72-F-13 . . . . . (Douglas, 1942)

## LEIDYOSUCHUS ACUTIDENTATUS:

- 72-H-5 . . . . . (Sternberg, 1932)

## LIOPISTHA:

- 72-J-12 . . . . . (Weston, 1899)

## MEGACEROPS:

- 72-F-10 . . . . . (Russell, 1940a)

## MOLLUSKS, GENERAL:

- Sed. Sask. . . . . (Russell, 1934b)  
62-E . . . . . (Russell, 1932)  
62-E-2 . . . . . (Whiteaves, 1885)  
72-F,G,H . . . . . (Russell, 1932)  
72-H-1 . . . . . (Mozley, 1932)  
73-A-1 . . . . . (Mozley, 1932)

## NEOMERYX FINNI:

- 72-O-15 . . . . . (Parks, 1925)

## PALEOBOTANY:

- 62 . . . . . (Fraser et al, 1935)  
62-E . . . . . (Dawson, Sir J. W., 1886); (Dawson, Sir J. W., 1888)  
62-E-2 . . . . . (Dawson, Sir J. W., 1881); (Penhallow, 1903); (Penhallow, 1908)

- |              |  |
|--------------|--|
| 72           | (Fraser et al, 1935)                         |
| 72-F         | (Berry, 1930); (Dawson, Sir, J. W. 1888)     |
| 72-F,G,H     | (Berry, 1935)                                |
| 72-G-1,2     | (Sternberg, 1924)                            |
| 72-H         | (Houldsworth, 1941)                          |
| 72-H-2       | (Brown and Houldsworth, 1939)                |
| 72-H-3,4     | (Dawson, Sir J. W., 1875); (Penhallow, 1908) |
| 72-H-3,4,5,6 | (McLearn, 1930)                              |
| 72-H-14      | (Wilson, 1912)                               |

## **GRAVITY SURVEY:**

Sask..... (Bowie, 1928); (Miller, A. H., 1927); (Miller, A. H., 1929a);  
(Miller, A. H., 1929b)

## **INTERIOR DRAINAGE:**

Sed. Sask..... (Perry, 1949)

## **MAGNETIC SURVEY:**

Sask.....(French, 1921); (French and Madill, 1927)

## **METEORITE:**

72-N-16 ..... (Nininger, 1932)

73-A-5 ..... (Nininger, 1936)

73-A-7..... (Johnston, R. A. A. and Ellsworth, 1921)

## **PHYSIOGRAPHIC DIVISIONS OF SASK.:**

Sask. .... (Anonymous, 1947b); (Dawson, G. M., 1875a)

## **PHYSIOGRAPHIC FEATURES ON MAPS:**

Sed. Sask.....(Weeks et al, 1948)

## **PHYSIOGRAPHIC HISTORY BIG MUDDY VALLEY:**

72-H.....(Houldsworth, 1941)

## **PHYSIOGRAPHIC HISTORY CYPRESS HILLS:**

72-F ..... (Alden, 1924); (Alden, 1932); (Lawson, 1925); (Russell and  
Wickenden, 1933)

## **PHYSIOGRAPHIC HISTORY LAKE ATHABASKA.:**

74-N,O.....(Alcock, 1920c)

## **PHYSIOGRAPHIC HISTORY SOUTHWEST SASK.:**

72-F..... (Williams, M. Y., 1929)

## **RIVER CHANNELS:**

72.....(Williams and Dyer, 1930)

## **SAND HILLS:**

72-K..... (Edmunds, 1929)

## **SAND PLAINS:**

72.....(Williams and Dyer, 1930)

## **SANDSTONE DYKES:**

72-F..... (Furnival, 1946); (Williams and Dyer, 1930)

## **STYLOLITES:**

74-N-10.....(Conybeare, 1949b); (Conybeare, 1950); (Shaub, 1950)

## **TERTIARY GRAVELS:**

72-F,G,H.....(Russell, 1950b)

## **WIND EROSION:**

72-I-4,5.....(Mitchell et al, 1942)

72-J-1,2,7,8.....(Mitchell et al, 1942)

## Soils

### BURN-OUT:

62-E-3,6,12...	(Dowling, 1919)
72-H-16...	(Dowling, 1919)
72-I-2...	(Dowling, 1919)

### SOIL SURVEY:

Sed. Sask...	(Dept. of Soils, 1936); (Mitchell et al, 1944); (Mitchell et al, 1950)
62-E-1,2,7,8...	(Dept. of Soils, 1926b)
62-E-12,13...	(Dept. of Soils, 1926a)
72-F,G,J,K...	(Dept. of Soils, 1931)
72-F-3,4,5,6...	(Dept. of Soils, 1925)
72-H-9,15...	(Dept. of Soils, 1926a)
72-I-3,4,5,6...	(Dept. of Soils, 1923a)
72-I-4,5...	(Mitchell et al, 1942)
72-J-1,2,7,8...	(Mitchell et al, 1942)
72-J-4,8,12...	(Dept. of Soils, 1923b)
72-K...	(Dept. of Soils, 1929)
72-K-1,8,9...	(Dept. of Soils, 1923b)
72-N-8,9,16...	(Dept. of Soils, 1927)
72-O-5,12,13...	(Dept. of Soils, 1927)
73-A-10,11,14,15...	(Dept. of Soils, 1928)
73-H-2,3...	(Dept. of Soils, 1928)

## Structural Geology

### AIR PHOTOGRAPHS:

Sask...	(Dept. of Mines, Air,); (Lang et al 1947)
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### EAGLE HILLS ANTICLINE:

73-C-9,10,15,16...	(Hume and Hage, 1936)
73-F-1,2...	(Hume and Hage, 1936)

### FRACTURE SYSTEMS:

74-N-9,10...	(Allen, R. B., 1950)
74-P-3,6...	(Allen, R. B., 1950)

### KISSEYNEW LINEAMENT:

63-K-12,13...	(Harrison, 1951a)
63-L-16...	(Harrison, 1951a)

### REGIONAL DIP:

Sed. Sask. ....	(Hume, 1933)
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### STRUCTURE MAP:

Sask. ....	(Geol. Assoc. Canada, 1950)
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### STRUCTURES FLIN FLON:

63-K-12,13...	(Harrison, 1951a)
63-L-9,16...	(Harrison, 1951a)

### STRUCTURES MISSI SERIES:

63-K-12,13...	(Ambrose, 1936b)
63-L-9,16...	(Ambrose, 1936b)

### THRUST FAULT:

72-F-4...	(Sheppard, 1921)
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**Also Available  
From  
SASKATCHEWAN GEOLOGICAL SURVEY  
NATURAL RESOURCES BUILDING  
REGINA, SASKATCHEWAN  
Canada**

- |   | Price        |
|---|--------------|
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| REPORT No. 6 (Previously: "Technical and Economic Series,<br>Report No. 1")<br><b>NATURAL SODIUM SULPHATE IN SASKATCHE-<br/>WAN</b><br>By R. V. Tomkins, 1948   | Out of print |
| REPORT No. 7 (Previously: "Technical and Economic Series,<br>Report No. 2")<br><b>CLAY RESOURCES OF SASKATCHEWAN</b><br>By W. G. Worcester, 1950  | \$1.00       |
| REPORT No. 8 (Previously: "Petroleum Geology Series,<br>Report No. 1")<br><b>THE GEOLOGY OF THE SOUTHERN PART OF<br/>THE CYPRESS HILLS SOUTHWESTERN SASK-<br/>ATCHEWAN</b><br>(Preliminary Report) by L. S. Russell,<br>1948 (1951) | \$1.00       |

GEOLOGICAL SURVEY

LEGEND

TERTIARY  
MIOCENE

32 32A WOOD MOUNTAIN FORMATION: gravel, some sand; mostly  
unconsolidated; 32A, probably chiefly Miocene gravels

OLIGOCENE

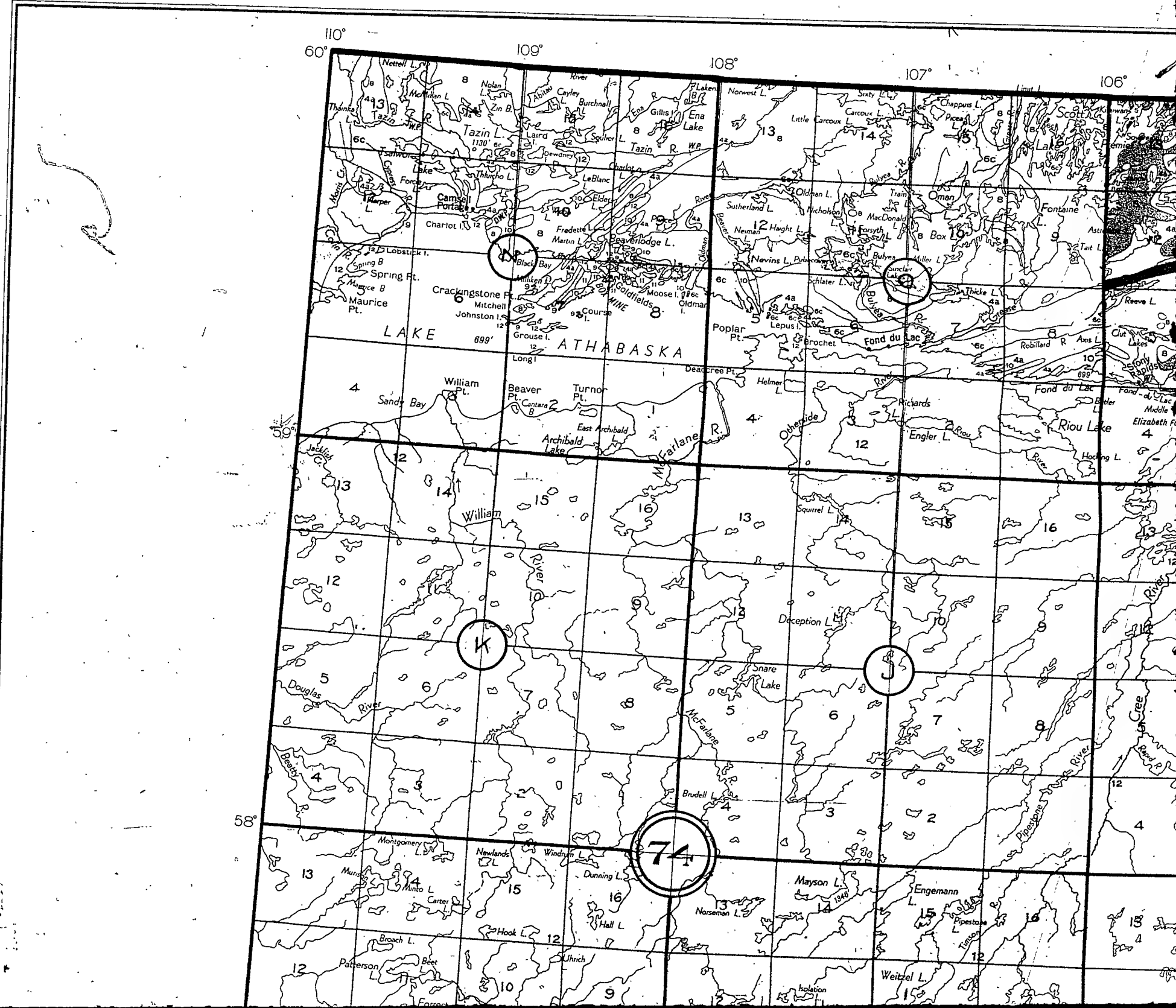
31 CYPRESS HILLS FORMATION: conglomerate, sandstone

EOCENE

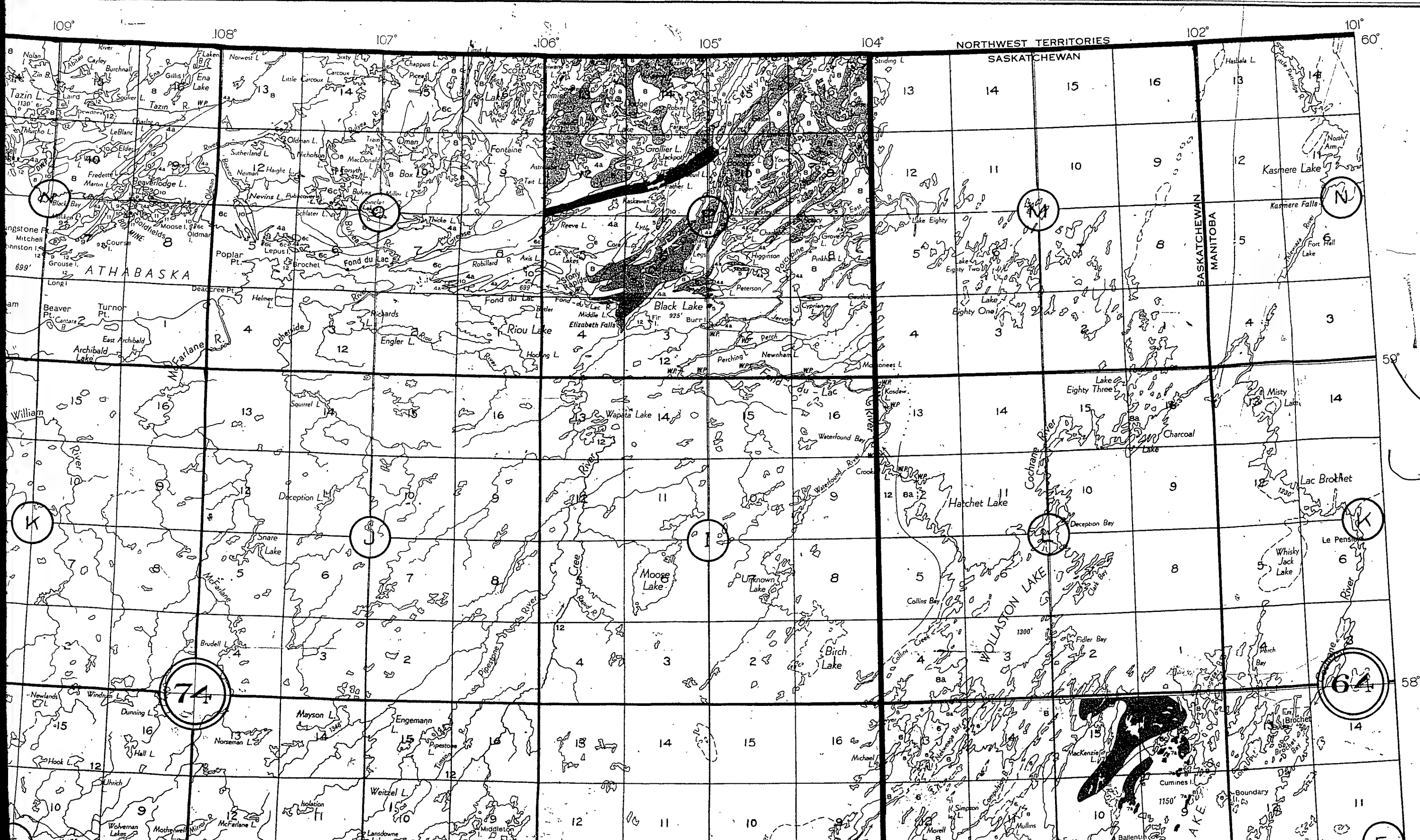
30 SWIFT CURRENT BEDS: conglomeratic sandstone, sandstone

PALEOCENE

29 RAVENSCRAIG FORMATION: sand, silt, shale, clay; lignite;  
29a, includes ...



CANADA  
DEPARTMENT OF MINES AND RESOURCES  
MINES AND GEOLOGY BRANCH  
BUREAU OF GEOLOGY AND TOPOGRAPHY





CENOZOIC  
Eocene  
Paleocene  
Cretaceous  
Upper Cretaceous  
Lower Cretaceous  
Devonian  
Silurian  
MESOZOIC  
Jurassic (?) and Cretaceous  
Lower Cretaceous and (?) Earlier

- 31 CYPRESS HILLS FORMATION: conglomerate, sandstone
- 30 SWIFT CURRENT BEDS: conglomeratic sandstone, sandstone
- 29 RAVENSCRAG FORMATION: sand, silt, shale, clay; lignite; 29a, includes some Upper Cretaceous beds

CRETACEOUS  
UPPER CRETACEOUS

- 28 EASTEND FORMATION: buff to brown silt and fine sand, grey shale; lignite  
WHITEMUD FORMATION: white, kaolinized sandstone, light coloured clay and silt; lignite  
BATTLE FORMATION: black and green bentonite, shale, silt  
FRENCHMAN FORMATION: mainly coarse sandstone

- 27 BEARPAW FORMATION: dark and grey shale; green sand, fine-grained sand and sandstone, in part glauconitic; smooth chert pebbles; concretionary beds; bentonite; volcanic ash

- 25 OLDMAN FORMATION, PALE AND VARIEGATED BEDS: sandstone, sand, white to light grey bentonitic sand; light to dark grey shale, carbonaceous shale; brown ironstone nodules; coal; 25a, includes part of Foremost formation

- 24 RIBSTONE CREEK FORMATION: grey and greenish grey sand and sandstone; dark grey shale, sandy shale; coal seams  
GRIZZLY BEAR FORMATION: dark grey shale  
BIRCH LAKE FORMATION: brownish and yellowish weathering sand and sandstone

- 23 LEA PARK FORMATION: dark grey shale with bands of ironstone nodules; fine-grained sand and sandy shale; bentonite

- 22 VERMILION RIVER FORMATION (Morden, Boyne, and Pembina members): dark grey shale, calcareous speckled shale, bentonite

- FAVEL FORMATION (Keld and Assiniboine members): calcareous speckled shale, limestone, bentonite; 21a, mainly, shale, age uncertain

LOWER (?) AND UPPER CRETACEOUS

- 20 ASHVILLE FORMATION: dark grey shale; minor silt, sand, limestone, and bentonite

LOWER CRETACEOUS

- 19 CLEARWATER FORMATION: shale

- McMURRAY FORMATION: sand, sandstone

DEVONIAN

- 16 Limestone, dolomite; 16a, may be Silurian

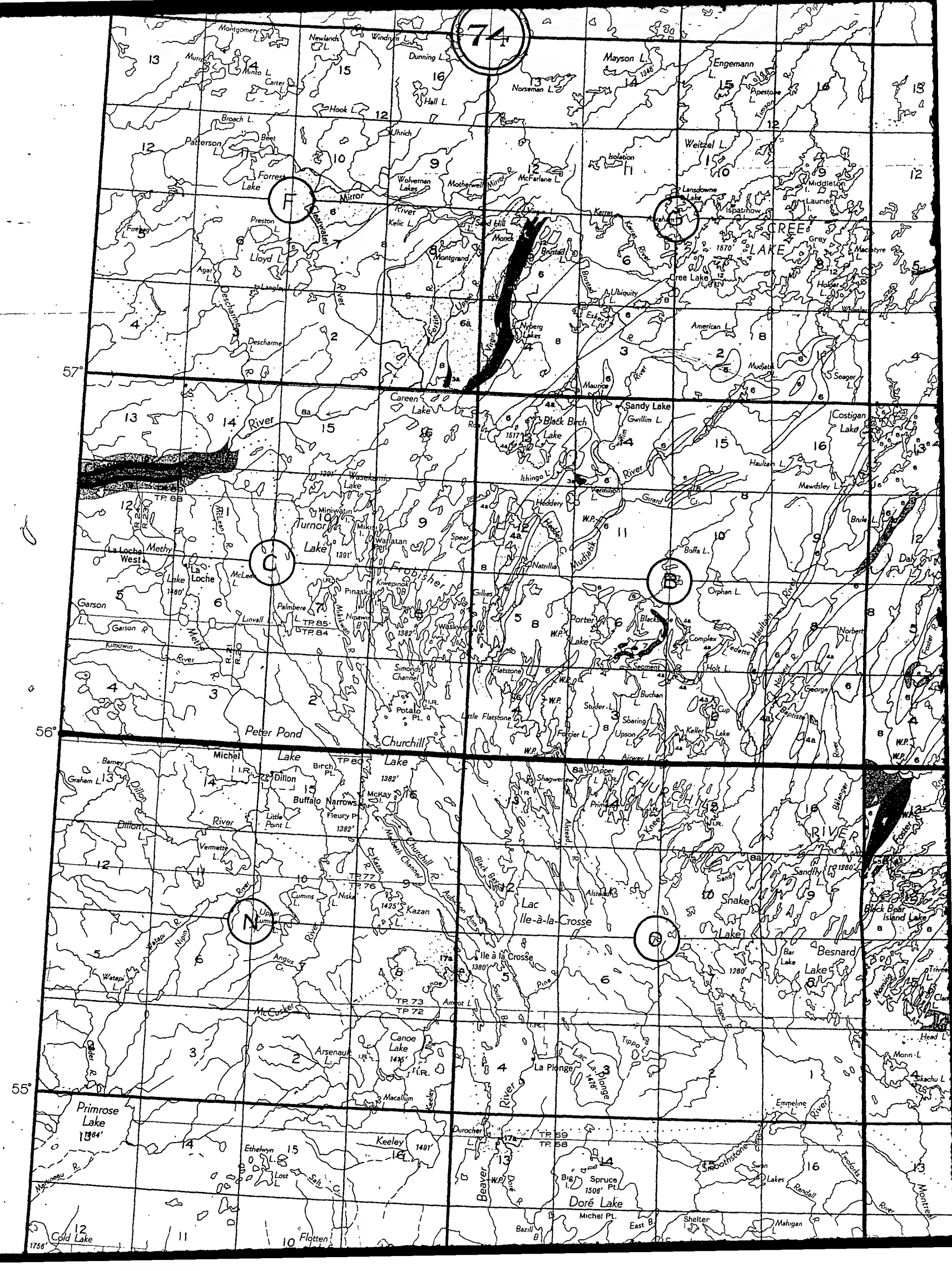
SILURIAN

UPPER CRETACEOUS

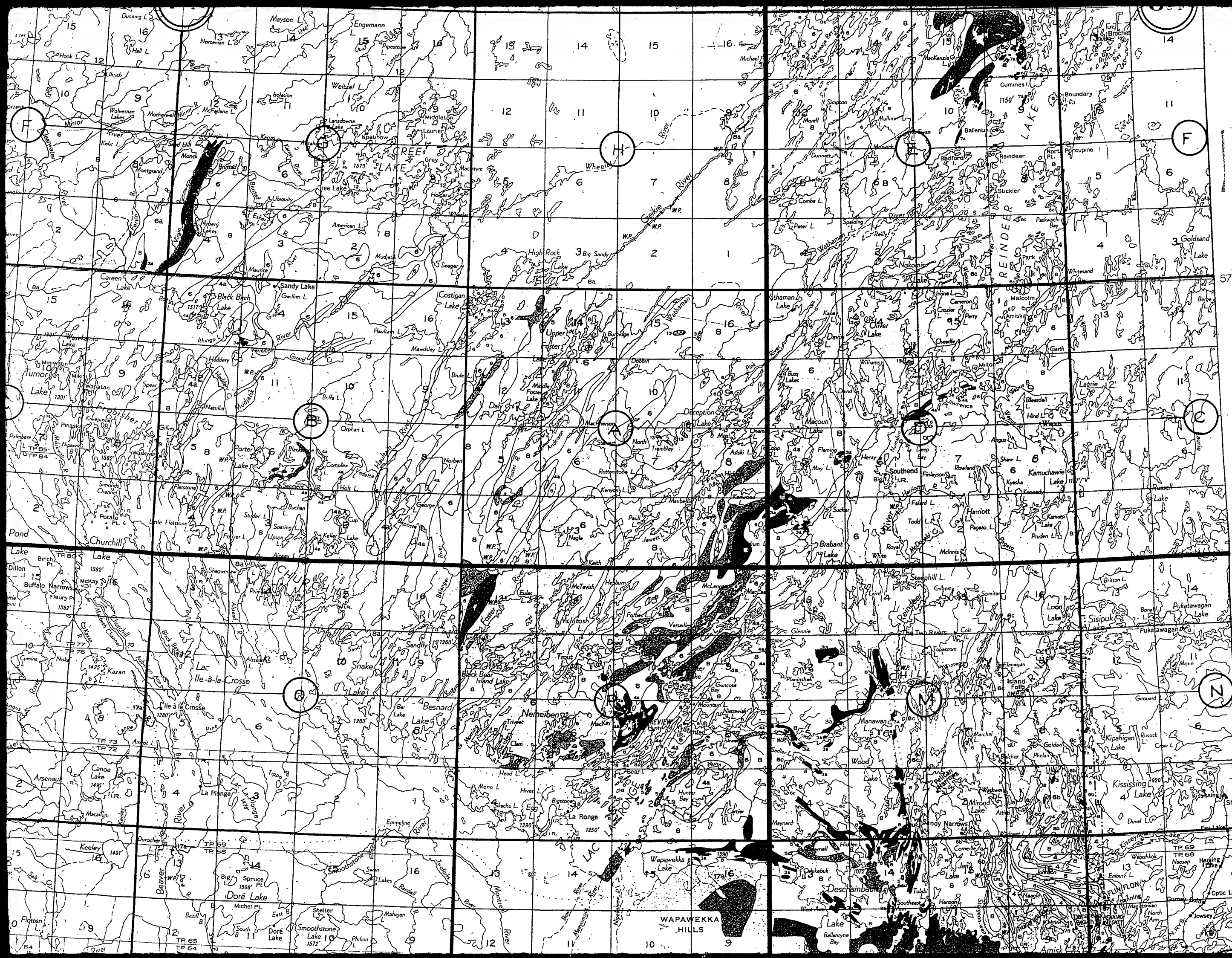
- 26 RIDING MOUNTAIN FORMATION: grey and greenish grey shale, siliceous shale (Odanah beds); abundant clay-ironstone concretions. Grades westward into shales equivalent to Bearpaw and older formations

JURASSIC (?) AND CRETACEOUS  
LOWER CRETACEOUS AND (?) EARLIER

- 17 SWAN RIVER GROUP: sand, sandstone, shale, clay; 17a, sandstone, minor shale



3 of



4 of



5 of

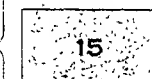
PALÆOZOIC

DEVONIAN



Limestone, dolomite; 16a, may be Silurian

SILURIAN



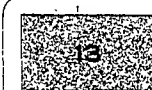
Magnesian limestone, dolomite, limestone

ORDOVICIAN  
UPPER ORDOVICIAN

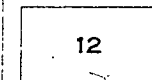


Dolomite, dolomitic limestone, sandstone

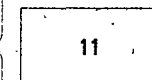
PROTEROZOIC



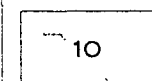
Diabase



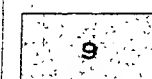
ATHABASKA SERIES: sandstone, conglomerate, arkose; minor basalt



Granite

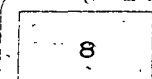


Gabbro, norite, amphibolite, peridotite



BEAVERLODGE SERIES: quartzite, conglomerate, iron formation

CHIEFLY ACIDIC INTRUSIVE ROCKS



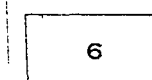
Granite, granodiorite, quartz diorite, and syenite, with gneissic and porphyritic equivalents; minor pegmatite and aplite; 8a, undifferentiated granitic intrusions and older gneissic and schistose sedimentary and volcanic rocks

CHIEFLY BASIC INTRUSIVE ROCKS



Diorite, gabbro, anorthosite, amphibolite, hornblende, pyroxenite, peridotite, serpentine; 7a, hornblende schist and gneiss associated with granitic rocks

COMPLEX OF SEDIMENTARY, VOLCANIC, AND INTRUSIVE ROCKS



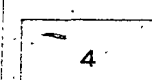
Sedimentary and volcanic rocks and intrusions (mainly acidic), 6a, chiefly volcanic rocks (3a) associated with intrusions (mainly basic); 6b, sedimentary rocks (4) associated with acidic intrusions; 6c, chiefly sedimentary rocks (4a) associated with acidic intrusions

VOLCANIC AND SEDIMENTARY ROCKS



Andesite, rhyolite, quartzite, greywacke; derived biotite, hornblende, and garnetiferous schists and gneisses; Undifferentiated 3a and 4a

CHIEFLY SEDIMENTARY ROCKS



Quartzite, greywacke, arkose, conglomerate; derived micaceous and garnetiferous gneisses and schists (Missi group and Kisseynew gneiss); 4a, quartzite, argillite, slate, greywacke, arkose, conglomerate, limestone, dolomite, iron formation; derived micaceous and garnetiferous gneisses and schists; includes Tazin group, in part, may be of the same age as 2

CHIEFLY VOLCANIC ROCKS



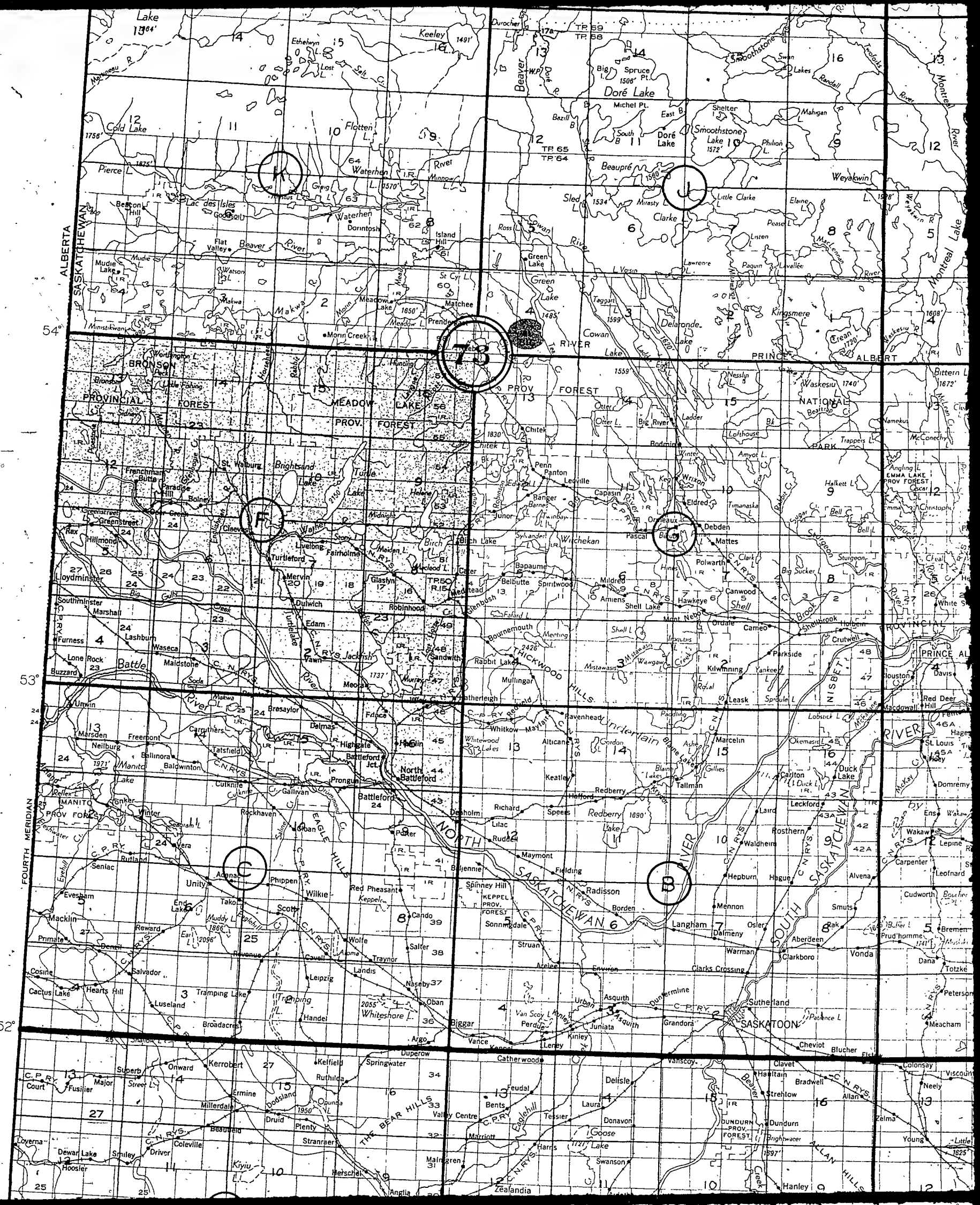
Hornblende gneiss and schist (Kisseynew gneiss, in minor part); 3a, andesite, basalt, rhyolite, trachyte, dacite, tuff, agglomerate; greenstone; derived schists and gneisses; includes Tazin group, in part; may be of the same age as 1

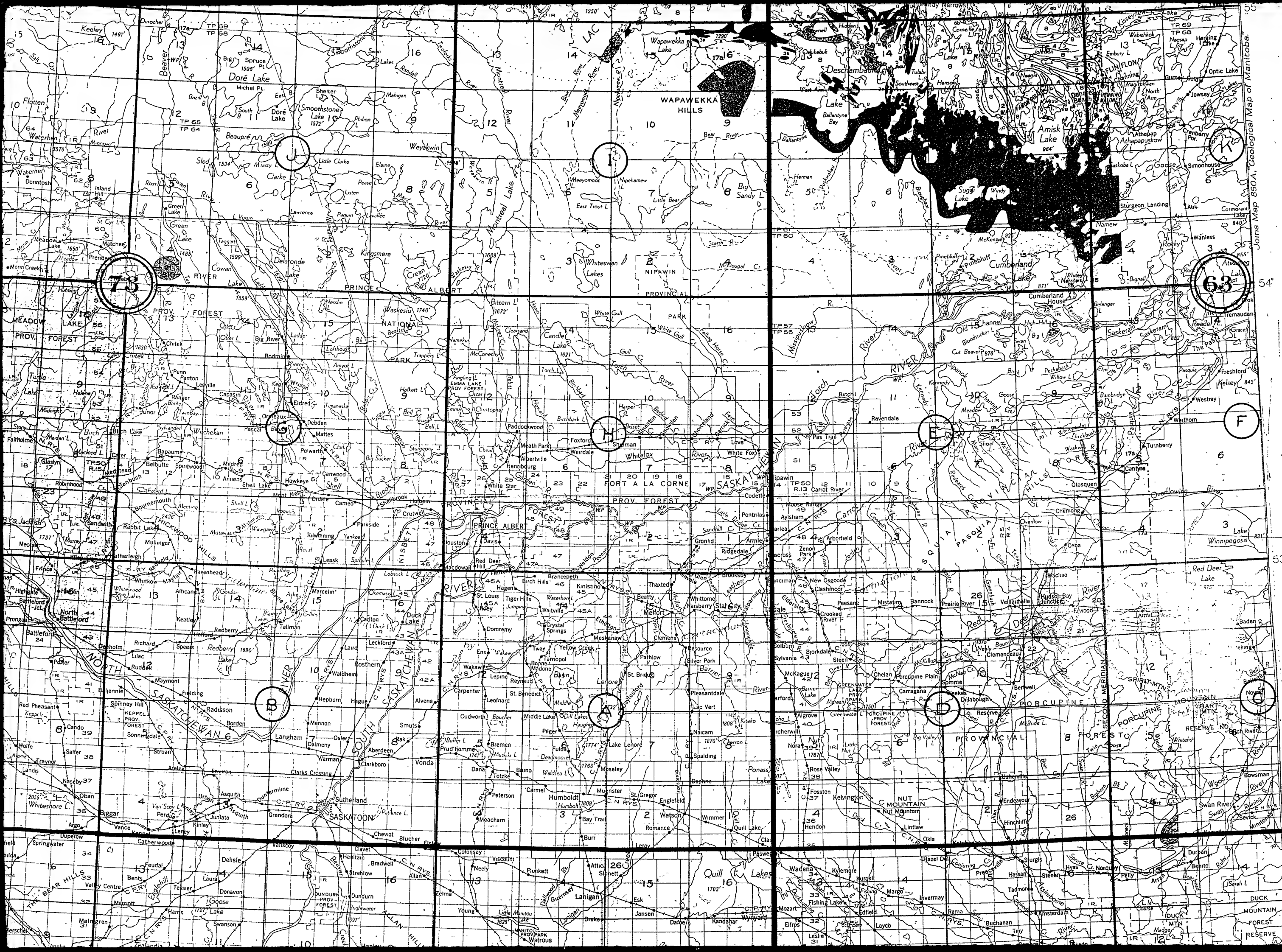
CHIEFLY SEDIMENTARY ROCKS



Quartzite, greywacke, arkose, conglomerate; derived micaceous and garnetiferous gneisses and schists (Missi group and Kisseynew gneiss); 4a, quartzite, argillite, slate, greywacke, arkose, conglomerate, limestone, dolomite, iron formation; derived micaceous and garnetiferous gneisses and schists; includes Tazin group, in part, may be of the same age as 2

ARCHÆAN OR PROTEROZOIC





Joins Map 850A, Geological Map of Manitoba.

6 of

63

F

C

53°

52°

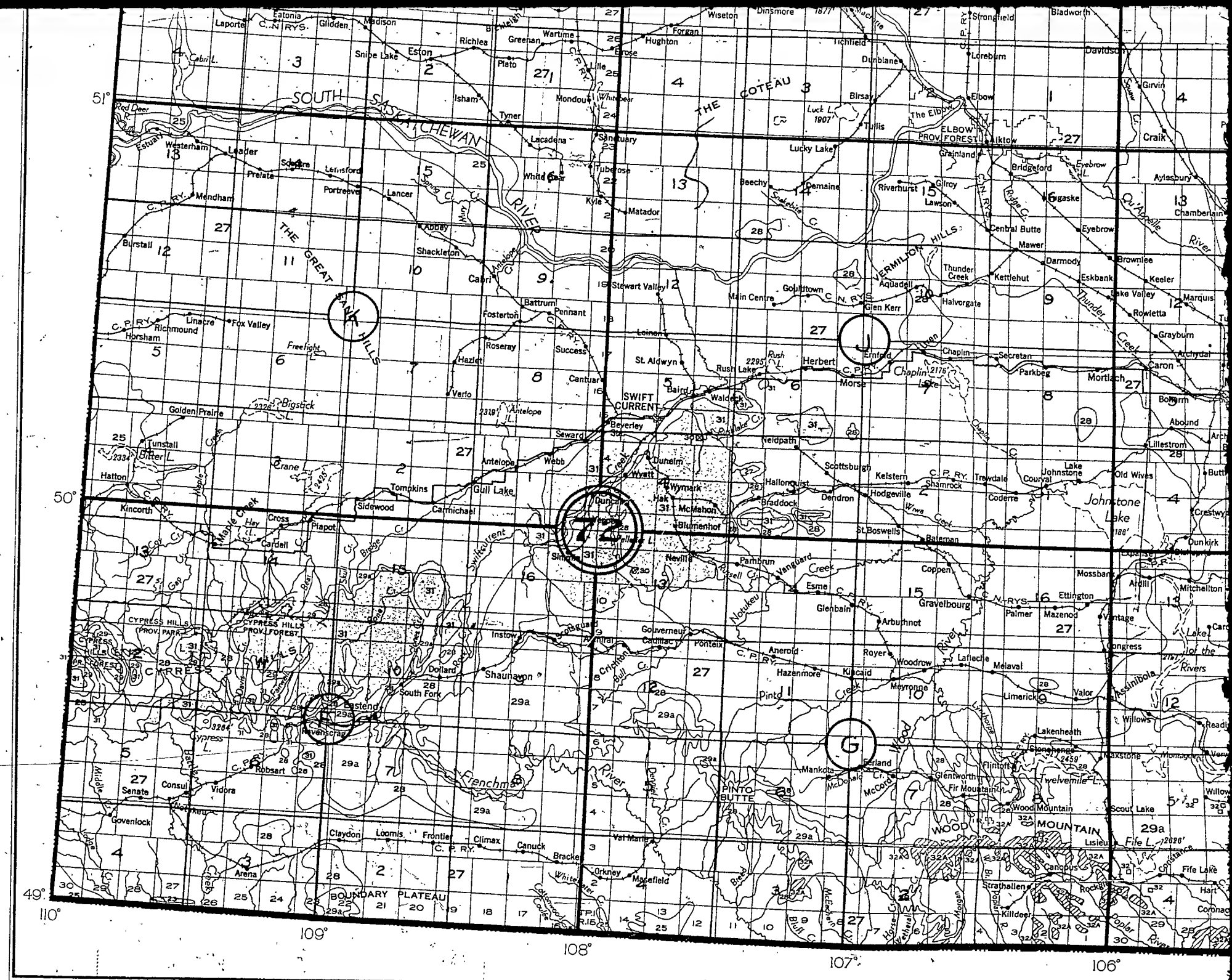


Productive metal mine x FLIN FLON  
 Developed water-power site DWP  
 Undeveloped water-power site WP

Geology derived mainly from published and unpublished maps and reports of the Geological Survey and, in part, from map information kindly supplied by Imperial Oil Limited Cartography by the Drafting and Reproducing Division, 1946

For Mineral occurrences and Glacial striae, see Map 896A, "Mineral Map of Saskatchewan," scale: 1 inch to 20 miles; Geological Survey, Canada, 1947.

7 of



MAP PUBLISH

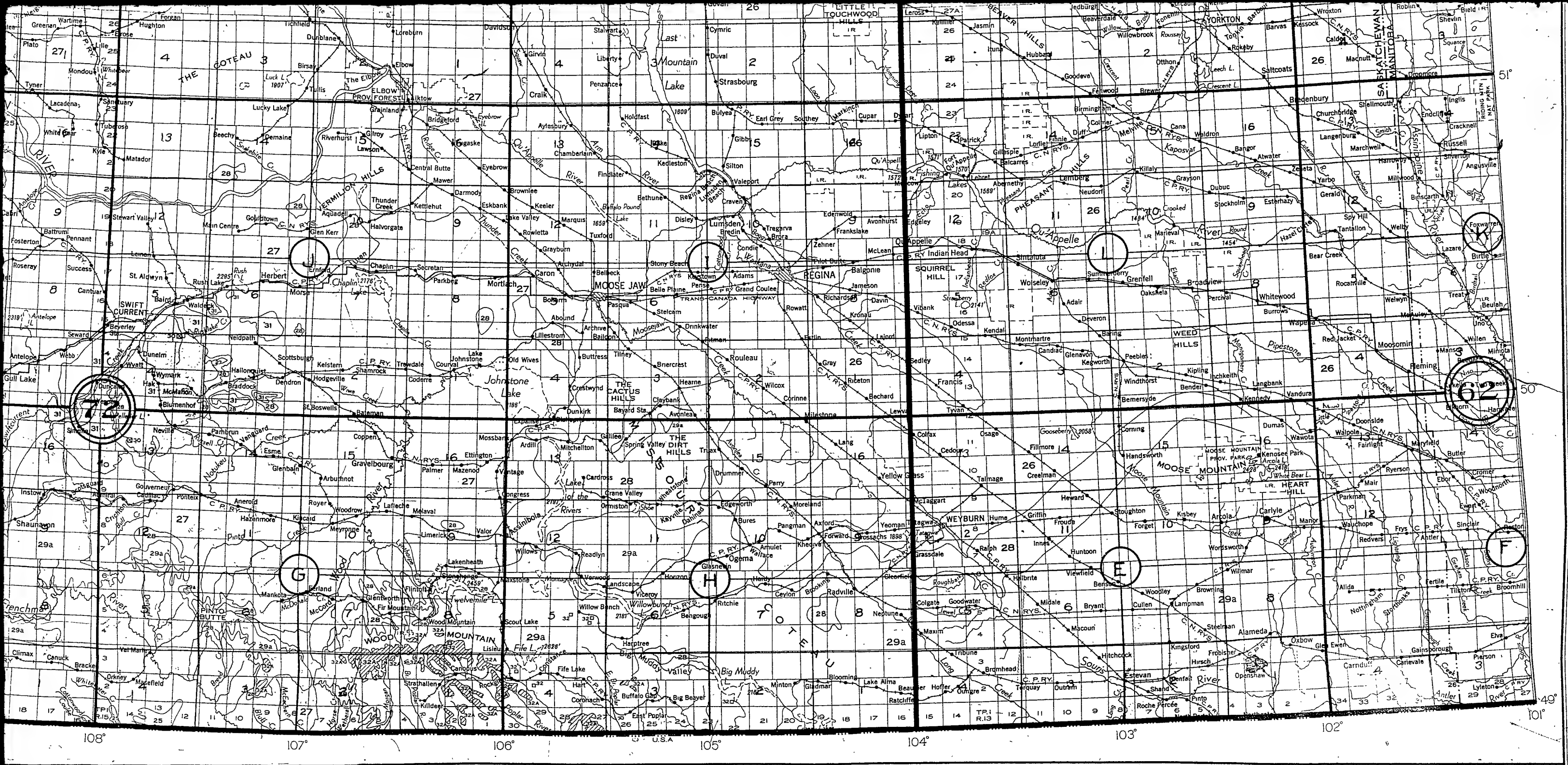
GEOLOGI

SASKAT

SCALE: ONE INCH TO T

MILES 20 0 20  
 KILOMETRES 25 0 25





MAP 895A  
(PUBLISHED 1947)

8 of 8

GEOLOGICAL MAP  
OF  
**SASKATCHEWAN**

OVERPRINT AND INDEX.  
BY THE  
PROVINCE OF SASKATCHEWAN  
DEPARTMENT OF NATURAL RESOURCES  
1952

SCALE: ONE INCH TO TWENTY MILES = 1,267,200

MILES 20 0 20 40 60 80 100 MILES  
KILOMETRES 25 0 25 50 75 100 KILOMETRES



## ALPHABETICAL INDEX OF GEOGRAPHICAL NAMES

ing a large area are indicated only by one map square in which the main part of the name can be found.

Freshwater Lake ..... 73-C-12  
 Frobisher ..... 62-E-1  
 Frontier ..... 72-F-2  
 Froude ..... 62-E-11  
 Frys ..... 62-F-12  
 Fulda ..... 73-A-6  
 Furness ..... 73-F-4  
 Fusilier ..... 72-N-13

## K

Gainsborough ..... 62-F-3  
 Gainsborough Creek ..... 62-F-6  
 Galilee ..... 72-H-13  
 Gallivan ..... 73-C-10  
 Gap Creek ..... 72-F-13  
 Garrick ..... 73-H-8  
 Garson Lake ..... 74-C-5  
 Garson River ..... 74-C-5  
 Garth Lake ..... 64-D-16  
 Gaste Lake ..... 74-P-15  
 Gauthier Lake ..... 74-P-1  
 Geikie River ..... 74-H-7  
 George Lake ..... 74-B-1  
 Gerald ..... 62-K-8  
 Gibbs ..... 72-I-15  
 Gilbert Lake ..... 63-M-15  
 Gillespie ..... 62-L-14  
 Gillies Lake ..... 73-B-15  
 Gillies Lake ..... 74-B-5  
 Gillis Island ..... 74-N-16  
 Gilroy ..... 72-J-15  
 Guard Creek ..... 74-B-11  
 Gavin ..... 72-P-4  
 Gaudmar ..... 72-H-1  
 Gair ..... 72-O-5  
 Galya ..... 73-F-3  
 Chapoevin ..... 72-H-11  
 Glenavon ..... 62-L-3  
 Glenbain ..... 72-G-14  
 Glenagie Creek ..... 73-F-11  
 Glenagie ..... 62-E-1

Kamata Lake ..... 64-D-1  
 Kamsack ..... 62-N-12  
 Kamsack Creek ..... 62-M-9  
 Kamuchawie Lake ..... 64-D-8  
 Kandahar ..... 72-P-16  
 Kane Lake ..... 64-D-13  
 Kaposvar Creek ..... 62-L-15  
 Karras Lake ..... 74-G-6  
 Karras River ..... 74-G-6  
 Kaskawan Lake ..... 74-P-11  
 Kayville ..... 72-H-11  
 Kavan Lake ..... 73-N-9  
 Kazan River ..... 73-N-9  
 Keatley ..... 73-B-14  
 Kedleston ..... 72-I-14  
 Keeler ..... 72-I-12  
 Keeley Lake ..... 73-K-16  
 Keeley River ..... 73-N-1  
 Keg Lake ..... 73-G-11  
 Keg Lake ..... 73-P-8  
 Kegworth ..... 62-L-3  
 Keith Lake ..... 74-A-3  
 Kelic Lake ..... 74-F-8  
 Keller Lake ..... 74-B-2  
 Kelliner ..... 62-M-5  
 Kelso ..... 62-F-13  
 Kelstern ..... 72-J-2  
 Kelvington ..... 63-D-4  
 Kenaston ..... 72-O-9  
 Kendal ..... 62-L-4  
 Kenossee Park ..... 62-E-16  
 Kennedy ..... 62-L-1  
 Kennedy Creek ..... 63-E-11  
 Kennedy Lake ..... 64-D-8  
 Kennedy Lake ..... 63-E-10  
 Kenwood Lake ..... 74-A-8  
 Kenyon Lake ..... 74-A-6  
 Koppel ..... 73-B-4  
 Koppel Lake ..... 73-C-8  
 Kennel ..... 72-N-14

McLean Lake ..... 74-G-6  
 McLean River ..... 74-C-11  
 McLennan Lake ..... 73-P-16  
 McMahon ..... 72-J-4  
 McMillan Lake ..... 74-N-14  
 McMoran ..... 72-N-7  
 McNab Creek ..... 63-D-10  
 McTaggart ..... 72-H-9  
 McTavish Lake ..... 73-P-14  
 McVey Creek ..... 63-E-7

## M

Macallum Lake ..... 73-N-1  
 Magbeth Channel ..... 73-N-16  
 Mackay Lake ..... 73-P-7  
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